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THE JOURNAL

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FACE AND URETA

12TH 1895

Ed. P.S.A. President

Meeting were read

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able the results of their work would be likely to
desirable it was that it should be carried to a
issue without any delay that could be avoided.

The following papers were read:—

"Prehistoric Remains in Cornwall." Part I.
Lewis, Esq., F.C.A.

"On the Northern Settlements of the
JOHN BEDDOE, F.R.S.

PREHISTORIC REMAINS IN CORNWALL

By A. L. LEWIS, F.C.A.

[PLATES I, II.]

Part I.—*East Cornwall.*

THE prehistoric remains of Cornwall have been the theme of many archaeological books and papers that it might be thought that nothing remained to be said about them, especially since the publication by the Society of Antiquaries of elaborate plans prepared by the Rev. W. C. Lukin and C. Borlase; but even this work, exhaustive as it appears, omits all mention of two large and important finds, and another large and almost unique monument which I describe in the course of the present paper. What, in the shortcomings of my predecessors, I shall not venture to say that I have to-day said the last word on an inexhaustible subject, but I shall be quite sure at any time that some more fortunate discoverer will find something that has escaped my own eyes. The more celebrated antiquaries who have preceded me

The first monuments I propose to describe are the three circles called the "Hurlers," situated about three miles north from Liskeard and half a mile from a curious natural pile of granite. They were most accurately surveyed by Mr. C. V.

Prehistoric Monuments in Cornwall

his description and plan are in the "Journal of the British Archaeological Association" for 1879, and they are measured in 1879 by Messrs. Lukis and Borlase, whose description will be found in the work published by the Society of Antiquaries. These three circles are in a line each about 530 feet and averaging about 15 degrees but the direction of the line from the centre of the northern circle to that of the middle circle is 12 degrees east of north, the line from the centre of the middle circle to that of the southern circle is 18½ degrees east of north. The three circles near Dymond, near Bristol, are arranged in a similar manner though the bearings are not quite the same. Mr. Dymond gives the diameters as 114, 140, and 108 feet for the north, middle, and south circles respectively: Mr. Lukis states the diameters as 110, 135, and 105 feet only, but this difference may be attributed to the condition of the circles, which is very ruinous, there being only eighteen stones standing and nineteen fallen out of a total of seventy-five in the three circles, as estimated by Mr. Dymond. Their destruction has continued to increase from time to time, for I found a stone in the northern circle in 1866, which Mr. Dymond also found there in 1870, but did not find it in 1871, when he completed his plan, but which he has inserted in his plan with a note reporting its disappearance. Mr. Lukis and Borlase who followed him in 1879 of course did not find the stone, and it does not appear in their plan. Mr. Lukis who visited these circles in 1894 reports the disappearance of one if not two stones which Mr. Dymond found in the southern circle. About 400 feet from the middle circle in a direction 21 degrees south of west from its centre, but within its southern edge, are two stones about 5 feet in diameter composing these circles are from 3 to 6 feet in diameter, 1 to 2 feet broad and thick. The most remarkable object near the circles is the "Cheesewring" hill, which is 4 degrees north, and stands up on the sky-line in a manner so frequently in connection with the Cornish hills and the most prominent hills around them, as to create an impression that the position of the circles was selected with a view to the effect to be produced by the hills. Near the Hurlers and Liskeard is the Trethevy Stone, forming a complete chamber, but standing not in the ground, from 2 to 3 feet high, which makes it difficult to see that the dolmen was ever either covered or intended to be covered. There are seven upright stones supporting a capstone 15½ feet by 10 feet, at a maximum height of 10 feet above the floor of the interior; the capstone has a small hole at one end which was probably cut to receive a stone.

one after the other, the first is described by Norden in or about 1884, and by Mr. Dymond in the "Journal of the British Archaeological Association" in 1879-80, and by Messrs. Lukis in the work published by the Society of Antiquaries, round which large numbers of

flint appears to have been brought from Duloe into implements, etc., at this place. There are many stones and other remains about the district. At Duloe, 4 miles south from Liskeard, a circle, consisting of eight large stones, the diameters of which have been thrown down and broken. They vary in size from 2½ to 6½ feet broad, and from 1½ to 4 feet thick. I have seen this circle myself, but it has been described by Mr. Dymond in the "Journal of the Archaeological Association" and by Messrs. Lukis in the work published by the Society of Antiquaries. Dymond says the diameters are from 34 to 39 feet, but I have measured the diameter is 36½ feet, so perhaps he took the

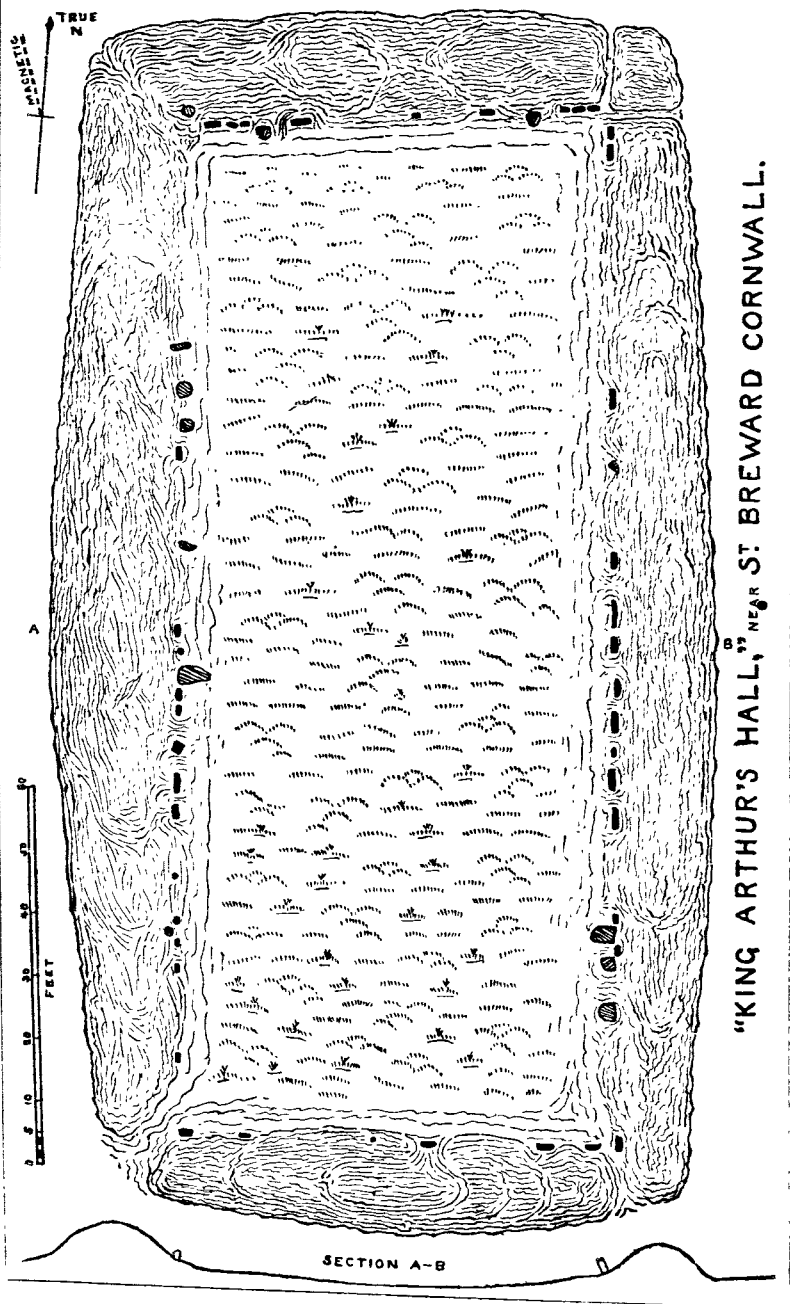
circle as an urn and other appearances of interment, which, however, may very well have been post Roman, have been the circle, and Mr. Lukis accordingly thought that it was probably the enclosing ring of a cairn which has been

This is an ordinary formula, but why the cairns should have been entirely carted out from the site, as some archaeologists would have us believe, is not clear. Mr. Dymond says "Mr. B. thinks it improbable that there was a tumulus within the Duloe circle."

One of the most important and the least visited monuments in Cornwall is situated on Bodmin Moor, round Brown Willy, Rough Tor, Garrow Tor. The two former are the highest points in the district. Their slopes are great numbers of ruined huts and enclosures of unshaped blocks of stone, and some small sepulchral circles, cists, etc.

A perfect hut which was described by the "Daily Graphic" of 1884.

There is no absolute proof that these huts and enclosures were the dwellings of the people who constructed them, but the upright stones which stand round them are shewn to be prehistoric, and that the huts were built by the same people. If we may judge of the period from the recent excavations in the huts at Dartmoor, that period must be a



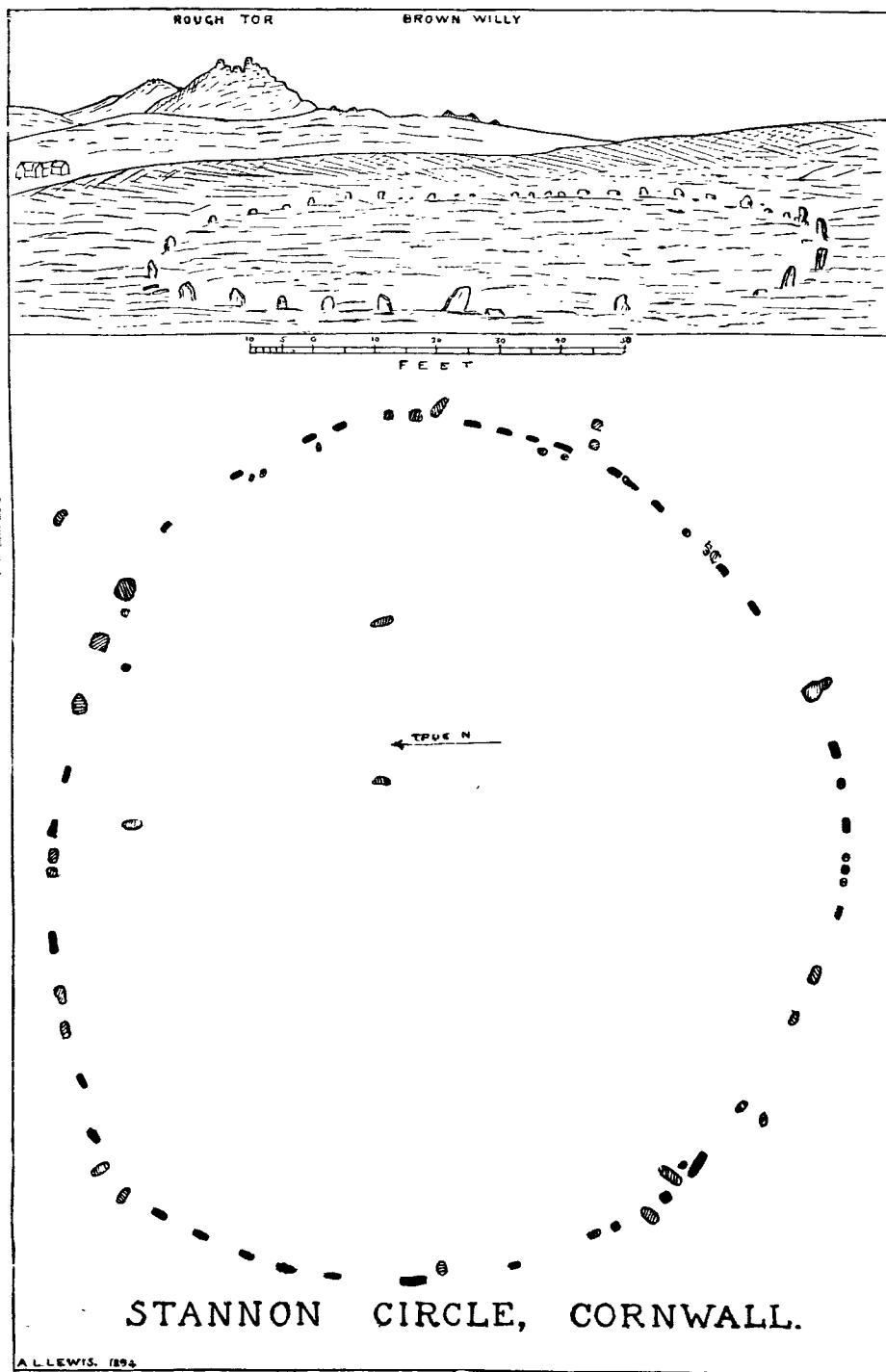
to one who sees the hut circles and enclosures, and the open stone circles, as they are on these, doubt for a moment which class, any one of them, and it is important to note this at a time when being made to induce people to believe that Stonehenge was roofed, and is only the skeleton of a dwelling of Mediterranean type, and that the inner circles at Avebury, though over 200 feet in diameter, were something of the same kind.

A very peculiar, I might say unique structure on Moors is known as "King Arthur's Hall." It consists of a bank of earth, the present breadth of which varies from 12 to 20 feet at the base, its height varying from 5 to 7 feet. This bank encloses an oblong space, 159 feet long north to south (within 5 degrees to west of north), 64 feet wide at the north, and 68½ feet wide at the south. Twelve stones stand or lie in line inside the north end of the bank, eighteen inside the east side, six inside the south end, and nineteen inside the west side. They seem to have formed a kind of retaining wall to the inner side of the bank, but are most pressed inward by its weight, and some are nearly buried by gradual wearing away. These facts, coupled with the fact that the lines, if not absolutely continuous, were originally more complete than they are now, lead me to suppose that several stones may be quite covered, but this can only be ascertained by digging or boring. The largest stones remaining in position are about 5 feet high. The middle of the enclosure is a foot or two lower than the ground outside, and is full of water, which finds a vent at the south-west corner. All corners of the embankment are more or less broadly rounded, and it is lower at the north and south ends than the east and west sides, but there is no appearance of special entrance, the angles of the lines of stones being defined, except, perhaps, at the south-west corner. Round Brown Willy, and Garrow, form a trinity of hills on 30 degrees of horizon, 15 on each side of the north. Hawkstone is south-east. This extraordinary monument, the purpose of which it is difficult to imagine, is neither mentioned in the work on Cornish rude stone monuments by Messrs. Lukis and Borlase, published by the Antiquaries; it has a slight resemblance to two enclosures in Brittany described by Admiral Tremlett in the "Anthropological Institute" for November, 1885, the each of which was at a corner. These appeared to be used as places for cremation, but we have no evidence of "King Arthur's Hall."

There are upon these moors five circles, from each of which Rough Tor is seen as a most conspicuous object, and of these circles two stand in a line with it, nearly due north and south, and two others in another line with it, 11 to 12 degrees east of north; two of the circles are also in line with Brown Willy nearly due east from them. The distances between the circles taken on the level on the 6-inch ordnance map show remarkable proportions to each other, and these peculiar positions and distances seem to make it probable that the circles, though far and mostly hidden from each other, were erected as part of one great scheme, a subject which I will revert to after briefly describing the circles themselves.

The Fernacre Circle, the most north-easterly of the group, was very probably the first to be erected. It stands on sloping ground, with Brown Willy nearly due east, Rough Tor due north (not west-north-west, as Mr. Lukis has said), and Garro due south, all standing up boldly around it. As Mr. Lukis has published a fully detailed plan, and as the time at my disposal was short, I did not measure it. He said it consisted in 1879 of ten fallen and forty-five erect stones, some of which were very small, and some between 3 and 4 feet high, and he thought they had sunk or become overgrown. I doubt whether this be the case to any great extent, still Mr. G. F. Tregelles found forty-five stones standing and "nineteen almost disappearing in the peaty soil" in 1893, and the nine which he found and which Mr. Lukis did not find may have become visible by a shrinking of the turf. Mr. Lukis says the diameter of this circle is 140 feet, but his own plan shows it to be 146-7 feet, and, on checking his stated measurements to ascertain the exact diameter, I found that three of them were not correctly laid down on his plan, the effect of which is to misplace one of the stones by about 4 feet. There is a small outlying stone about 160 feet east from the circle, directly in line with the highest peak of Brown Willy, and this fact, together with the position of the circle relative to the three hills and to the Stannon and Strippel Stones, leads me to suppose that, if the distances between the circles were really measured, this was the circle from which measurements to the others were taken.

The Stannon Circle, the most north-westerly of the group, the nearest to the Fernacre Circle, and is in a direct line with it and Brown Willy, and also with the small outlying stone to the east of the Fernacre Circle, and was therefore, perhaps, the second in order of construction. It consists of about seventy stones and fragments, of which thirty-three are upright, but none of them exceed 5 feet, and some are not more than 2 feet in height. The diameters of the ring are 138 feet from east to



Standing stones black, fallen stones and fragments shaded.

west and 125½ feet from north to south, there being a flattening of the northern side, in which respect it Long Meg Circle in Cumberland. Rough Tor, a little than a mile distant, and ranging from 20 to 24 degrees of east, is by far the most conspicuous object seen it, and its granite cairn, showing two peaks with a lower between, would present a very remarkable appearance if the sun framed itself between them, as it probably does at some time in the year. Brown Willy is almost entirely hidden by a ridge of no great height, which also conceals Garrow and the Fernacre Circle entirely, but, looking due east, three of the peaks of Brown Willy may be seen peeping above the ridge and forming a triple summit, an appearance which I have noticed in connection with several other circles. The Stannon Circle is neither mentioned nor figured by Messrs. Lukis and Borlase in their work published by the Society of Antiquaries.

The Stripples Stones Circle is at the south-east angle of the space marked out, so to speak, by the position of the circles. It is on the south-eastern slope of Hawkstor, and looking due north from it the top of Rough Tor will be seen over Garrow, the Fernacre Circle being in the same line but out of sight in the hollow between them. This circle differs from all the rest in being surrounded by a ditch, 11 feet wide, with a low bank of about the same width outside it; there is but one entrance, which opens exactly in the direction of the Trippet Stones Circle, about 13 degrees south of west, but there are three semi-lunar projections in the vallum (W.N.W., N.N.E., and E.) Mr. Lukis stated the diameter of the circle to be 148½ feet, but it is doubtful from his own plans whether it is not 2 feet less, exactly the same as that of the Fernacre Circle. A stone, 12 feet high, stood in the centre, but is now fallen, as are twelve of those left of the circle, there being only four standing, which are from 4 to 6 feet high.¹ One of the fallen stones was 12 feet long, but if now in its original position, must have stood outside the circle, but inside the ditch and vallum. The original number of stones composing the circle itself, was, in Mr. Lukis's opinion, 37, but Mr. Tregelles thinks the number to have been more probably 28, which also seems to me more in accord with Mr. Lukis's own measurements. At a short distance² from the eastern side of the circle there is a small barrow with a central cist. Hawkstor is 60 degrees

¹ There were five standing when Mr. Lukis made his plan in 1879, but Tregelles found only four standing in 1893.

² Mr. Lukis says 232 feet, Mr. Tregelles says 110 feet. I did not measure the distance myself, in 1891, as there is no apparent connection between the barrow and the circle.

orth of west from this circle; Rough Tor
due north, Brown Willy covers from 15

—1 a trinity of lower hills extends from
east of north.

Trippet Stones Circle is at the south,—
group of four circles, and is the smallest of them
diameter, according to Mr. Lukis, being 104 feet 7 in.
When I visited it in 1891 there were eight stones standing
fallen, one of which had fallen since Mr. Lukis made
plan in 1879, and, as they were all surrounded by pools of
the downfall of some of the others may be confidently expected.
The height of these stones varied from 4 to 5 feet, an
tional foot or so being sunk in the ground. The interval
about 12½ feet from centre to centre, which seems very regular
between the remaining stones, would indicate their primary
number to have been twenty-six or twenty-seven. There is a
small stone inside the circle, but it is a modern boundary
stone, and there is another a short distance due east. Two
stones are in a north-westerly line from the (outer S.E.) edge of
the circle to Carbilly Tor, a very inconsiderable eminence.
Rough Tor and Brown Willy form with Hawkstor a trinity of
hill-tops extending from 12 to 62 degrees east of north.

The Leaze Circle is situated nearly in the middle of the
trapezium of which the other four circles form the corners, but
is not visible from any of them, and does not appear to have
any relation to any of them except that it is in the same line
from Rough Tor as the Trippet Stones Circle. It consisted
the present time of ten stones standing and one fallen; they are
from 3 to 4 feet high and one to two and a half in width
and thickness, there are also four or five fragments, three of
which are buried in a fence which cuts the circle in halves.
The diameter of the circle appears to have been 83½ feet, but the
—eastern segment is wanting. Rough Tor is on the whole
the most conspicuous hill, and covers the horizon from 10 to 20

degrees east of north; Garrow extends from 30 to 40 degrees
of north, and hides Brown Willy; Butter's Tor makes
an eminence at about 30 degrees north of east; Catshole Tor
is 24 degrees north of east, and Hawkstor 73 degrees south of

There are some outlying stones about 10 degrees east of
north which may however have formed part of a cist, and there
— what appear to be the remains of another circle a short
distance to the north-west, between the Leaze Circle and

Hall. None of these remains are mentioned or described
in a work by Messrs. Lukis and Borlase published by the
Society of Antiquaries.

— and already mentioned that there is a remarkable

distances of four of these circles from
 are, as nearly as can be ascertained
 on the map:—

Stannon to Stannon	.. ..	6,275 feet	=	3,000 cubits of 25.1
Stannon to Trippet Stones	.. ..	16,400 "	=	7,840 " (for 8,000 cubits.)
Trippet Stones to Stripple Stones	.. ..	4,180 "	=	1,998½ cubits of 25.1 (practically 2,000.)
Stripple Stones to Fernacre	.. ..	15,730 "	=	7,520 cubits of 25.1 inches (practically 7,500.)
Fernacre to Trippet Stones	.. ..	16,880 "	=	8,070 cubits of 25.1 (for 8125.)
Stannon to Stripple Stones	.. ..	16,850 "	=	8,035 cubits of 25.1 (for 8125.)

The Leaze Circle may have been intended to be at the crossing of the diagonal lines from Fernacre to Trippet and from Stannon to Stripple, but is about 700 feet north of that point—perhaps the original intention was varied in order to get the Leaze circle in a particular line with Rough Tor.

The diameters of the circles are:—

Fernacre	.. ..	146-7 feet	=	70 cubits of 25.1 inches.
Stannon	.. ..	{ 138 "	=	66 " " "
		{ 125½ "	=	60 " " "
Trippet Stones	.. ..	104 ft. 7 ins.	=	50 " " "
Stripple Stones	.. ..	146-7 feet	=	70 " " "
Leaze	.. ..	83½ "	=	40 " " "

The cubit of 25.1 inches, which Professor Flinders Petrie calls an Egyptian or Royal Persian cubit, has been found by him in the work of the 19th dynasty (say 1300 B.C.), and it is highly likely that the circles are anterior to that date. If this

it were not really used as a measure in the construction of the circles it is very remarkable that their diameters are

divisible by an even number of such cubits, and it is also

that the distances between the four

also be an even number of them within the

of one per cent. which Professor Flinders Petrie

characteristic of ancient British work.¹ The

these distances are in the proportion (within one per

2, 3, 7½, 8, and 8½ seems to indicate that some measure

used in setting them out, but we must remember that

the distances are measured as on the level,

ground is particularly irregular. If, however, the

the circles wished to arrange them as they appear

on the map, I think they might have done it in this way:—firstly

they might have determined a straight line, by the aid

of the hills and the stars, and have marked it out

¹ The distance from the Stannon circle to the Trippet Stones is about 1 per cent. in error.

and secondly, they might have measured the lines marked out by means of two light or 20 feet 11 inches' length, which end to end, and moved alternately, and kept of plummets when going up or down hill; suggestion I may point out that the greatest errors to be expected under such circumstances, in the long distances, which are also those which cover the of the ground, the shorter distances, namely from to Stannon and Trippet Stones to Stripple Stones, exact; as are the diameters of the circles. It may said that, although the method of measurement suggested would not be beyond the power of the ancient people who lived in the stone huts and probably erected stone circles, it would only be thought of by some one was accustomed to the works and ways of a higher civilisation. But the use of an oriental measure indicates intercourse of some kind with a more civilised people, while the fact that the 25.1 inch cubit does not, so far as I have been able to find at present, appear in connection with any other circles seems to suggest that that intercourse may have been of a casual rather than of a frequent character. It seems therefore not unreasonable to suppose that someone from some country bordering on the Mediterranean may have visited Cornwall perhaps three thousand years ago, as a merchant, explorer, or refugee, or possibly as a slave kidnapped and carried thither for sale, and that, being there, he was employed by the local chief in the construction of his public works.

If, however, the apparent use of the 25.1 inch cubit and the seemingly proportionate distances between the circles are purely accidental coincidences, and if the circles are to be regarded as having been erected independently and without reference to each other, the fact that two of them—Fernacre and Stannon—were placed (independently) in one line with Brown Willy, nearly due east; that two of them—Fernacre and Stripple Stones—were placed (independently) in one line with Rough Tor and Garrow, nearly due north and south; and that the others—Trippet Stones and Leaze—were placed (independently) in another line with Rough Tor, 12 degrees east of north, seems very difficult to explain, except upon the hypothesis that the builders of the circles did intentionally place them in such position that the hills should be in those particular directions from them. This hypothesis is also supported by facts observed in Wales, Shropshire, and Cumberland and already recorded in the "Journal of the Anthropological Institute."

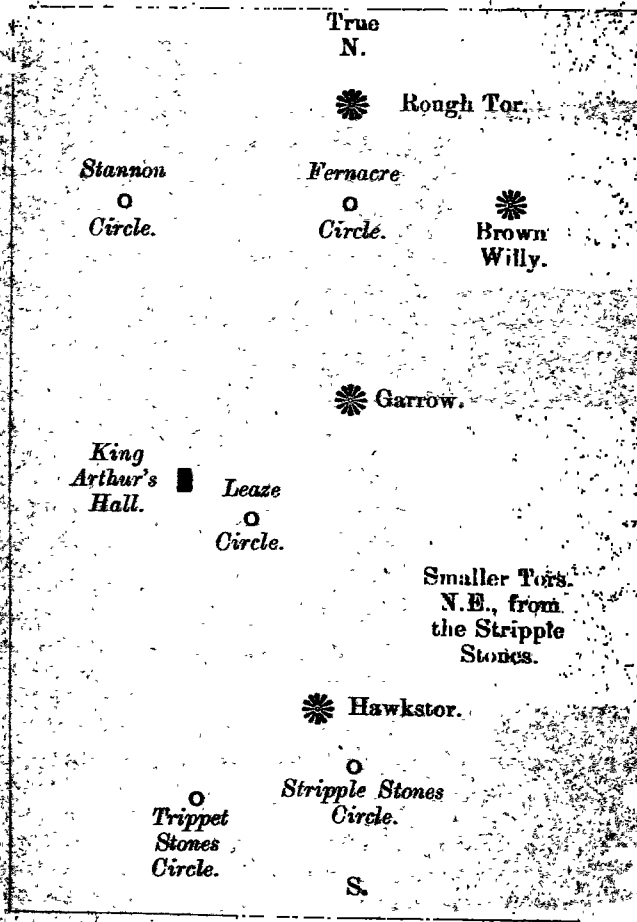
There are, however, some present to-night acquainted with the contents of our Journals of former years, and for information, I may perhaps be permitted to add a few words upon the apparent connection between the circles — hills, and upon the probable purpose of that connection.

When I first began the investigation of these subjects, nearly thirty years ago, I was duly impressed with the well known fact that persons standing on the so-called altar at Stonehenge, at sunrise, on the longest day, see the sun rise over the point of the outlying stone called the "Friar's Heel," and with the deduction not only from this circumstance, but from the arrangement of the inner part of Stonehenge itself, that that monument was constructed with a special reference to the rising sun at mid-summer; but it appeared to me that, if this were so, some similar arrangement should be found in connection with other large circles, and when inspecting such other circles I looked for and generally found something of the kind. Sometimes it was an outlying one, sometimes a complete circle or circles, sometimes an inner sanctuary opening in the north-easterly or midsummer sun rising direction, and latterly I found that in hilly countries a hill-top often seemed to take the place of the outlying stone; that is to say a circle was so placed that there was a hill to the north-east of it, the top of which the sun would probably rise at midsummer. I also found that to the north-east there was often a group of three

and to the north-west or south-west a single summit only. I found recorded various instances in which other temples appeared to have been specially placed in reference to the sun, and to hills or mountains which, although not amounting to evidence, made it appear still more probable that our circles had been designed in a similar manner.

There was, however, this difficulty, that, while an outlying stone or hill anywhere between north-east and south, and north-west and south, might be connected with the sun at some period of the day, nothing north of north-east or north-west could be connected with any such connection, and that, in some cases, the outlying stone or hill was more to the north of the circle than

could be explained by the solar theory. For some time I only suppose that in such cases the first appearance of the sun was looked to rather than the appearance of the sun itself (which there is good precedent), or that the placing of the outlying stone or stones had become rather conventional. These explanations I still think may apply in some cases, but not in others. About three years ago, Professor Norman Lockyer published a series of articles in "Nature" (since reprinted as a book), in which he showed that, while many of the circles were constructed as observatories to verify



Sketch Plan, measured from the ordnance
1 inch to 1 mile, showing positions and distances of
hills on Bodmin Moors.

at a certain period of the year, others with special reference to the pole-star, and Mr. Penrose has since found similar conditions at the early Greek temples. It therefore seems probable of our own circles, which have skymarks in hills or stones to the north rather than to the north-east, were designed with reference to the pole-star or some other northern star instead of to the sun; although, unlike Egyptian temple, which could only be used as an observatory for the circle might serve as a centre for the observation of both sun and stars by the various marks on the skyline in different directions formed by stones or hill-tops. Thus, of the circles on Bodmin Moors, which I have just described, some have hills to the north-east, some to the north and north-east and some to the east and north or north-east, so that they might have been used in the worship or observation of different heavenly bodies, or at different seasons, as is the case with the various temples of the Chinese state religion around Peking.

Sir Austen Layard, in his account of his discoveries at Nineveh (1852), describes a visit to the Yezidis or so-called devil-worshippers of Mesopotamia, who are a sun-worshipping or at least sun-reverencing sect; he also mentions the Sabæans of the same country, of whom he says:—"They turn during prayer according to some to the north star, or according to others towards that part of the heavens in which the sun is," from which I infer that they turn sometimes to the north, sometimes to the other, just as I suppose the builders of the Cornish circles to have done. Sir Austen Layard had apparently at that time any personal knowledge about the Sabæans, but the "Standard" of 19th October last

gave a long account of their rites by some one who had been present at their nocturnal ceremonies. According to this writer the Sabæans erect a temporary obelisk open to the sky, and some other structures, at a certain evening in September, which is the beginning of the autumn.

The chief priest enters at the south end and worships the pole-star, which they consider to be the paradise of the hereafter. Processions and dances are begun at midnight and carried on almost till dawn; these ceremonies include the sacrifice of a pigeon and the eating by the worshippers of a cake marked with the blood of the sacrifice; also the letting loose of a flock of sheep, I presume on the same principle as the release of the prisoners by the Israelites.

I have already shown that the position of some of the circles with regard to the surrounding hills and

such as to make it probable that ceremonies of a description may have been performed in them.

DISCUSSION.

T. V. HOLMES hoped Mr. Lewis would, in his more fully the evidence tending to show that the measurement used in the construction of these circles was a— it seemed to him at that moment that the unit—a spear-length or any other conceivable measure. The Institute was to be congratulated on the full and careful in which Mr. Lewis had studied the topography of the places which these circles existed—a matter much neglected by the fashioned antiquary.

Prof. RUPERT JONES asked for the author's opinion as to studied aspect of bifid and trifid rocks or mountain-tops mentioned as being visible from the circles. He was glad that of the builders of these very ancient structures were subjected to careful research. How far the special opinions of Bryant and others as to the probable religions (Arkite) of their construction were to be upheld or not further research would prove.

Mr. LAURENCE GOMME said that although as a visitor he did not know Mr. Lewis was going to read a paper on stone circles, he had read all Mr. Lewis's previous papers, and perhaps therefore on two matters of criticism might not be out of place. In the first place he noted that Mr. Lewis was anxious to fix the date of the circles and the religion that they indicated before he had attempted upon the people who had built these monuments. Surely the latter was the first stage in the inquiry. Mr. Lewis had appropriately pointed out the sites of prehistoric dwelling-places on the neighbouring hills and it at once raised the question as to the relationship between these dwelling-places and the circles—not determined by the natural topographical details of the country but rather than by abstruse calculations on the solar system. A further question was also raised by this important factor.

Mr. Gomme well remembered a remarkable study by the late Mr. Pitt-Rivers appeared in the Journal of the Institute, in which he pointed out that the Teutonic settlement always proceeded on a plan of placing the villages in the valleys and sending the cultivation grounds up the sides of the hills. This was in direct contradiction of the evidence now adduced by Mr. Lewis, where the villages were at the top of the hills with cultivation grounds no

Here then was an indication of a different and more primitive race of people. Now, we know fairly well the position of the stone circles, the races occupying the country, and the races still erecting stone circles. This was the basis of the speaker's judgment from which to ascertain the relations of our own stone circles. He demurred altogether

Discussion.

that travellers to Britain from Egypt or might the prehistoric races to build stone circles on them. These races were savages and could not have been in a culture so much higher than their own. Lastly, the speculative theories we were going back perilously near the ideas of Bryant and Davies, and he, the speaker, would join Professor Rupert Jones in asking Mr. Lewis what relationship his conclusions had to those of the older and less informed antiquaries. These criticisms he did not wish to underrate Mr. Lewis's services in the gathering of important facts.

Mr. Lewis, in reply, said the only evidence as to the use of certain cubit was that the diameters of the five circles were even tens of such cubits—namely, 40, 50, 60, and 70, and the chances against such a thing occurring accidentally were enormous. One diameter was 66 cubits, so it would seem that the longest measure that could have been used for all of them would be a spear-shaft (to take Mr. Holmes' view) exactly 4 feet 2½ inches long. Such a thing might have existed, and might have been used for the purpose, but it would be a very singular accident if it had. The idea of setting out the circles by measurement and using the same unit for all (whether it were a cubit, or a spear, or anything else) indicated a greater amount of intelligence than Mr. Gomara seemed willing to allow to the men who inhabited the lands by which the circles were surrounded, and by whom the circles were probably, though not certainly, erected. If these men had not the necessary knowledge it made it more likely that some more intelligent outsider had assisted them, perhaps without letting them know quite all that he was doing, or perhaps making a demonstration of his abilities with a view to creating a position for himself amongst the wild people in whose power he was placed. Mr. Lewis thought the construction of circles in this country might have begun two or three thousand years B.C., and have been continued up to, and here and there perhaps during and after, the Roman occupation, but, if these circles were contemporary with the surrounding huts (as he thought most likely), their date would be rather early. The object of the circles could be deduced from a study of the monuments themselves, and of the other circles which were put elsewhere; in other countries some circles were sepulchral, while others were known to be for worship or sacrifice; in this country some small circles were sepulchral, but others, especially the larger ones, were mainly not; those he had been describing belonged to the latter class, and, since they were so arranged as to be in particular relation to certain hills, he supposed that arrangement had a meaning. It might be observance or worship of sun, stars, or hills, or of the hills themselves, and the triple summits suggested a phallic element. The elevation of two or three hundred feet in the situation of the circles would have thrown the lines and distances quite out of nature of the ground afforded no reason except what he

but rather the contrary, why the circles stood just as they were, he thought his view most likely to be correct. If the approximate date and object of the circles could be ascertained, it would be a step to the identification of the builders, concerning whom there had been too much baseless speculation. The relation between the artificial hill of Silbury and the circles at Avebury had been remarked for two hundred years, but he did not think the older antiquaries, or anyone before himself, had suggested any connection between the circles and the natural hills near them, but his suggestions as to this had been approved by some liberal archaeologists of the present day, who were better acquainted than he himself was with the country and the monuments from which he had drawn his conclusions. He thanked the various speakers and the audience generally for the manner in which they had received his paper.

On the Northern Settlements of the West-Saxons.

By JOHN BEDDOE, M.D., LL.D., F.R.S.

We may gather from the statements of the Saxon Chronicle that a very large body, or rather large bodies, of Teutonic immigrants landed on the coast of Hampshire, and pushed northwards and north-westwards. South Hampshire and the south-eastern corner of Wiltshire would seem to have been among their earliest conquests; but even here Mr. Shore's papers, read to this Institute, are sufficient to show that the prior occupants of the country were not wholly extirpated nor ever wholly expelled, a sufficient number of them remaining, whether as wives or as vassals of the conquerors, to transmit some of their traditional notions or usages. Still, the preponderance of the intrusive blood is, in my opinion, witnessed by the prevailing forms and complexions of the modern inhabitants of this tract of country.

It is evident, however, that a long period elapsed before the conquerors pushed their western boundary far up the valleys of the tributaries of the Avon. Bokerley Dyke, which the discoveries of General Pitt-Rivers have shown to be of very Roman if not rather of post-Roman date, may have constituted a part of that boundary for a considerable time. But the next advance of the Saxons was towards the north, is no doubt far from uniform; very likely some of the most desirable parts of North Hants had been hardly reached when the fertile vale of the Kennet had been overrun.

posed to infer, from the meagre data which
affords, that the successive stages of the
the west of England were caused not so much
ambition or combativeness of the kings who carried
as by the multiplication of the Saxon nobles and freemen,
after time, beyond the numbers which their lands would
support, by the need in fact of lands and serfs for the super-
abundant warriors of the rising generation. In the
Ceawlin, who played in the south of England the part
Ethelfrith played in the north, there may have been a concu-
rence of an ambitious and able leader with a large accumulation
of available military force. In 571 he seems to have
the Thames; and the decisive battle at Bedford placed all
Oxfordshire and more than that under his sway. Ensham
and Bensington were his; and it may have been already easy
for his younger warriors to follow upwards the broad and
valleys of the northern tributaries of the Thames, to occupy the
existing manors and settlements, or to carve out new ones
the woodland and desert whence population had decayed. The
Welshmen, however, still held Cirencester, which was not
subjugated until six years later, after the battle of Dyrham;
so that the middle-Cotswold region, and the valley of the
Churn in any case, were not yet open to settlement. The
name Churn is ancient (*Corinium, Ciren-cester*), but I strongly
suspect that those of the Windrush and the Evenlode, tribu-
taries of the Thames which rise further to the north-east, and
whose valleys open into Oxfordshire, are of Anglo-Saxon
derivation. And where the Keltic name of a considerable
natural feature in topography has not come down to us,
always suspect that the Anglo-Saxon or Scandinavian
ers were numerous in proportion, or, what comes to near-
same thing, that the district was vacant and desolate
invaders arrived.

Bath was captured, and apparently destroyed or allowed
to fall into ruin and depopulation, at the same time

But Dr. Guest gives reasons for believing
Malmesbury, and probably Bradford, and a great part of
valley of the Avon between Malmesbury and Bath, remained in
the hands of the Welsh until a good deal later. And
General Pitt-Rivers's discoveries have upset Dr. Guest's
with regard to Dorset and South Wilts and
so-called Belgic ditches, his reasonings with regard to
further north are still generally accepted. On
this thus laid down, the population of East Gloucestershire
ought, like that of Central Oxfordshire, to be largely
the country about Cirencester should be

that of the upper valley of the Bristol Avon in a much larger pre-Saxon element. Let us see if physical characteristics agree with this view. I have lately made a fair number of observations on the eyes at the little town of Moreton-in-Marsh, or, as its name seems to call it, Moreton-in-March; the occasion was a fair, and the subjects in great part farmers and peasants. I have a smaller number from Cirencester, Fairford, and Bradford-on-Avon. The number, 60, is too small for anything like a general conclusion. I believe the sample to be a pretty fair one. From Bradford-on-Avon I have 250; in this series the sexes are equal, and there is a large proportion of countryfolk; the number is large enough to be fairly trustworthy.

It will be observed on reference to the table annexed, that in the northern part of the district under consideration, as represented by Moreton-in-Marsh, has a very blond population, the distribution of colour bearing resemblance to that which I have observed in other "Saxon" districts of England, and in parts of Flanders, Holland, Friesland, and Westphalia, with the same tendency to the conjunction of hazel or dark eyes with lightish rather than of light eyes with dark hair. The headforms, so far as I could judge from simple inspection, were mostly the two types which Gildemeister found at Bremen, the "Saxon" and the (so-called) Batavian, which are also those commonly found in Anglo-Saxon graves.¹

The figures from Cirencester and its neighbourhood, so far as they go, point in the same direction, though the "Saxon" element may not be quite so strong. It is the women who here contribute most of the dark eyes and hair, and especially the blue eyes, which is the rule throughout England, and, I think, in all the northern parts of Europe. In the figures from Bradford-on-Avon the mixture of the dark element, quite subordinate at Moreton-in-Marsh, comes into prominence; there is still a general resemblance, but every dark-haired column is distinctly fuller. The proportions, however, are much more like those of other districts of Wiltshire than those of any part of Somerset, the combination of blue eyes with dark brown hair being still uncommon, the "Wiltshire eye," which is a kind of muddy hazel, being very noticeable.

Bradford has been a weaving town for many centuries; its population has on the whole been a stationary one; and such strange blood, apparently, has been introduced by descent or intermarriage, except that Flemish or Walloon

¹ "Races of Britain," pp. 46, 47, 203, 204, 207-209.

² *Ibid.*, pp. 177-8, 257.

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at times settled here as refugees on account of the native breed of Wiltshire generally is sturdy and stably in this place I am struck with the number of puny men, generally dark-complexioned, who may perhaps be to extent the results of continued unfavourable influences in the way of degeneration, or of misdirected social selection. Such influences have probably not acted to anything like the same extent in East Gloucestershire; in recent times anyhow, that part of the country has been almost wholly pastoral or agricultural.

Still, it is difficult to avoid the conclusion that the differences in colour which I have mentioned are correlated with differences of race, and that they confirm the belief that the West Saxons settled numerously on the Upper Thames before they began to interfere with the inhabitants of the valley of the Bristol Avon.

MARCH 12TH, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The presents which had been received were announced and thanks voted to the respective donors.

The deaths of Mr. HYDE CLARKE and Mr. C. H. E. CARMICHAEL were announced.

The following papers were read:—

"The Changes in the Proportions of the Human Body during the period of growth." By Dr. WINFIELD S. HALL.

"Notes on the Languages spoken in Madagascar." By J. LAST, Esq.

The CHANGES in the PROPORTIONS of the HUMAN BODY during the PERIOD of GROWTH. By WINFIELD S. HALL, Ph.D., M.D.

[WITH PLATES III, IV, V.]

In order to collect material which could serve an immediate purpose in school hygiene and which could be subsequently used in an anthropological investigation, I have made, under the favourable circumstances, careful and extended observations upon about two thousand school boys and students of Philadelphia and suburbs. The study, from an anthropological standpoint, of the material so collected was made in Leipzig during the summer of 1894.

A. THE CONDITIONS OF THE INVESTIGATION.

The high tension of both physical and intellectual life in American schools and colleges, makes it expedient that such institutions employ the service of a physician whose examination of the pupils and students may afford an index of the physical capacity of the youths as well as to detect and prevent over-taxation of this capacity. These physical examinations are usually made twice annually. During four years (1889-93) the writer has been medical examiner at Haverford College, Philadelphia, and during two years of that period performed a similar service for three schools in or near Philadelphia, viz.,

William Penn Charter School, the Haverford Grammar School, and the Wilmington Friends' School. All of these institutions are under the management of the evangelic denomination of Friends or "Quakers." A very large proportion of the youths are sons of *Friends*. Their parents were almost without exception born in America, and the families came originally from England. The families were with very few exceptions well-to-do. These youths presented still another point in common; the exceptional opportunities which these institutions offered for physical development induced a great majority of the students and pupils to enter actively in athletics. They therefore presented a higher physical development than is usually found in city schools.

The material which came under the observation of the writer is therefore, exceptionally homogeneous as to (1) race, (2) nationality, (3) social and financial condition, (4) development, (5) sex; and we can accept the results in this material as representing a true American type.

the circumstances under which the observations were made were exceptionally favourable, because the youths were under the control of the examiner and his assistants during examination. A special room was devoted to the purpose, and all of the measurements and observations were made upon the nude body.

B. THE OBSERVATIONS.

a. Anthropometric Observations.

These, though of less importance to the institutions than the anatomical and physiological observations, were used to determine the special exercise which individuals should take in gymnasium (Turnhalle).

a. Instruments used.—(1) A vertical measuring staff divided into centimetres. This strong staff was held in its position through being firmly fixed in a small portable platform. Upon this vertical staff was fitted a horizontal travelling arm. This instrument was used to take all vertical measurements such as "Height of Body," "Height of Knee," &c. (2) A centimetre measuring tape made of waxed linen. Theoretically this material is inferior to the steel tape, but finding the latter exceedingly difficult to read readily and unpleasant to the subject, the waxed linen tapes were substituted and frequently compared with a steel tape. (3) Wooden calipers which were used to measure "Interacromial Breadth," "Intertrochanteric Breadth," length of upperarm, forearm and foot. (4) Metal calipers which were used to measure depth of chest and abdomen. (5) Scales which gave the weight in pounds. This was reduced to kilogrammes. (6) A Mathew's Dynamometer with which the strength of back, legs, chest, and forearms was determined. (7) A spirometer used to determine the capacity of the lungs.

β. The Procedure.—A card was devoted to the observation and history of each individual. On entering the room he wrote his name and such items of his personal and family history as he could himself answer upon the card. He then presented himself nude to the examiner, who proceeded to take the measurements, hereafter enumerated, which were recorded by an assistant. A second assistant took and recorded the vital capacity of lungs, and the strength tests. In this manner an examiner and two assistants were able to examine about 15 persons per hour.

γ. Measurements.—

1. Height of Body.—The subject stands upon the measuring platform with his back to the vertical staff so that four points come in contact

Human Body during the Period of Growth.

(1) the heels; (2) the sacrum; (3) the interscapular spinous
vertebrae; (4) the occipital protuberance. The horizontal arm
is pressed lightly upon the crown and the height read from the vertical staff.

II. *Height of Pubes.*—The subject turns his side to the vertical staff,
horizontal arm is brought to the upper edge of the symphysis pubis,
the height read from the vertical staff.

III. *Height of Knee.*—The subject steps off the platform with
while the tibia of the other extremity is left parallel to the staff; in this
position the horizontal arm is brought to the upper surface of the
tibial femur vertically over the tibia, and the measurement read. The
procedure is open to the objection that it is not the measurement of the
tibia but rather of the lower segment of the leg plus the antero-posterior
diameter of the femur. I admit this criticism, but say in defence of the
measurement that its principal factor is the length of the tibia, that the
error of measurement is very small, and that it is made with minimum
expenditure of time. All of these considerations are very important when
one must examine such a large number of individuals. It may be stated
here that this measurement was taken both for the right side and for the
left; which is true of all observations admitting of a right and left
measurement. The median value of these right and left measurements
has been found separately. The value given for height of knee in the
Anthropometric Table I is the average of these two means; this is true of
girth of thigh, girth of upperarm, &c., &c.

IV. *Girth of Head.*—One measures the largest circumference, or the one
passing through the occipital protuberance and immediately above
superciliary ridges. The tape must be applied symmetrically and must
be drawn quite tightly in order to eliminate, as far as possible, the error
due to the presence of hair.

V. *Girth of Neck.*—One measures over the larynx and transverse to the
axis of the neck. In all measurements of soft parts of the body,
observer is in constant danger of a large error of observation through the
varying amount of tension which he inadvertently applies to the tape.
In the measurement of the neck one may easily make a difference
of a centimetre through a very moderate change in tension, while a difference
of even 2 centimetres may be made in such large circumferences as those
of chest and abdomen. This source of error may be reduced to at least
one-half of the above-mentioned limits, if one takes care to bring the tape
to a uniform tension before reading any measurement. Some anthropo-
metrists use a little spring index on one end of the tape which indicates
the degree of tension.

VI. *Girth of Chest* is to be measured in a horizontal plane
includes the nipples. A further source of error to which this measure-
ment and the two following are subject is the varying amount of air in
lungs. After trying several plans the writer chose the following
essential advantages; the measurement is taken after forcible
expiration and after forcible inspiration. The average of these is
named as the girth of the chest in repose and is the value
in the table.

II. *The Girth of the Chest at the ninth Rib* is found by passing
a horizontal plain and through the juncture of the ninth rib
cartilage.

III. *The Girth of Abdomen* is measured in a horizontal plane,
passes through the umbilicus. The measurement is taken
domen is as little as possible affected by the quiet breathing.

X. *The Girth of Hips* is measured in a horizontal plane
determined by the point midway between the trochanter and
the ilium.

W. S. HALL.—*The Changes in the Proportions of the*

The Girth of Thigh (as well as measurements XI, XII and after the subject has separated the feet to a distance equal to about length of one of the feet. The subject must stand with the parts of the body symmetrically disposed, and must not put muscular stress upon the muscles involved in the measurement. The observer must be careful to avoid the errors which creep in through the spirit of emulation among the youths. To have an arm or thigh whose girth is 1 centimetre greater than that of one's rival is an envied distinction among schoolboys.

XI. *The Girth of Knee* is measured over the middle of the patella.

XII. *The Girth of the Calf (crus)* is measured at its greatest diameter.

XIII. *The Girth of Ankle* is measured at the smallest diameter, just above the malleoli.

XIV. *The Girth of Upperarm*.—The subject extends the arm horizontally sideways and flexes the forearm until it stands at right angles to the upper arm; with the arm in this position, one measures the girth at its greatest point.

XV. *The Girth of Elbow*.—While the arm is extended, one measures the girth over the upper extremity of the olecranon process.

XVI. *The Girth of the Forearm* is taken at the largest diameter.

XVII. *The Girth of Wrist* is taken just distal to the styloid process of the ulna.

Measurements X to XVIII were taken and recorded as right and left. The median value of these was found and the average of this median is recorded in the Anthropometric Table (I).

XVIII. *The Depth of Chest* is found by the use of the steel calipers, one point of which is placed upon the sternum in the middle of joining the two nipples, and the other point upon the dorsal spinal process which lies in a horizontal line from the point taken on the sternum. In this position the calipers are clamped and removed. The distance between the two points of the calipers may be measured upon the vertical staff upon the long arm of the wooden calipers. This observation is made after forced expiration and inspiration, and the average taken. Measurements of the chest which involve forced expiration and inspiration, the difference of the two measurements is a valuable index of the mobility of the chest skeleton.

XIX. *The Depth of Abdomen* is found with the same instrument. One point of the calipers is placed on the anterior surface of the abdomen about 1 cm. above the umbilicus, while the other is placed on the spinous process directly dorsal to the first point.

XX. *The Interacromial Breadth* is naturally the distance between external extremities of the two acromions, and is measured with wooden calipers (as are also measurements XXI, XXII, XXIII, XXIV).

XXI. *The Intertrochanteric Breadth* is the distance between the outer surfaces of the greater trochanters.

XXII. *The length of the Upperarm*.—The subject places the upper arm vertical, with the forearm at right angles to it. One measures the distance between the upper surface of the acromion process and the lower part of the olecranon.

This procedure and that in XXIII, are subject to the same criticisms which we have already discussed under III (*Height of Knee*); and in the same points in their favour; the variable factor in each case is the bone whose length makes most of the segment measured. The measurement is subject to a small error of observation, and may be made quickly.

XXIII. *The Length of Forearm and hand*.—The subject retains the position of the previous observation except that the fi

Human Body during the Period of Growth.

measurement is taken from the superior end of the olecranon to the tip of the third digit.

XXIV. *The Length of Foot* is measured from the posterior surface of the calcaneum to the tip of the first or second digit.

XXV. *The Weight of nude subject* is recorded in kilogrammes.

XXVI. *The Capacity of Lungs* is readily measured by means of the spirometer. The subject fills the lungs as full of air as possible and slowly expels it through a tube into the instrument. The volume of air is read from an automatic register.

XXVII. *The strength of Back.*—This observation, as well as **XXVIII**, **XXIX**, **XXX**, is made with the help of the dynamometer. The strength of the back and the legs being too great to be registered directly by the dynamometer, recourse is had to a lever which is placed under the floor of the above mentioned platform and whose long arm, five times the length of the short arm, rests against the dynamometer. The subject communicates his strength to the short arm of the lever by means of a chain and a handle. He stands upon the platform, extends his legs, and flexes his back, and, grasping the handle, which has been adjusted to a convenient height, he exerts the force of the extensor muscles of the back. The dynamometer registers approximately $\frac{1}{5}$ of the power exerted.

XXVIII. *The strength of the Extensor muscles of the Thigh.*—The subject standing as in **XXVII**, but with extended back and flexed legs grasps the handle and extends the legs. The dynamometer registers $\frac{1}{5}$ of the power exerted. In these two strength tests the strength of grip of the hands or the strength of the flexores digitorum muscles forms a limit to the test, for it frequently happens that the subject is not able to exert the full strength of back or legs owing to his inability to retain his grasp of the handle. To be sure a fertile mind could easily contrive a harness for the shoulders which would supplement the grip-power, but in testing the strength of young, growing individuals, it is wise to leave this hygienic limit undisturbed, for in competing with each other they might otherwise easily injure themselves.

XXIX. *The Strength of the Pectoral Muscles.*—The dynamometer is held in a case which affords two convenient handles about 15 cm. apart, and so arranged that power exerted to bring the handles nearer together is applied directly to the dynamometer. The dynamometer-case is held against the anterior surface of the thorax in such a way that the two forearms lie in one horizontal line and the subject exerts the strength of the muscles in question against the handles.

XXX. *The Strength of the Fore arm*, or of the flexor muscles of the fingers, is found directly with the dynamometer.

XXXI. *The Strength of the Upper arm—of both extensor and flexor muscles.*—In both cases the strength is measured by the number of times these muscles are able to raise the body from the floor. In the first case the subject stands between "parallel bars," with hands upon the bars, the forearm flexed sharply upon the upperarm, and lifts his weight from the floor through contraction of the triceps until the arm is fully extended. In the second case he grasps the "horizontal bar" and lifts his body until his chin is above the bar. Let us suppose that the subject weighs 50 k. and lifts his body ten times by extension and twelve times by flexion of the arm, he lifts 50 k. 22 times or 1,100 k. In order not to give this test an undue preponderance among the other strength tests one takes arbitrarily 10%, or 110 k. as the strength of upperarm. This result is more valuable than the process is scientific.

b. Anatomical and Physiological Observations.

None of the observations in this group have been used in the present investigation. Their purpose, as is apparent from the character of the observations, was to find and record the exact physical condition of the pupil. A knowledge of this condition enables the examining physician to protect the student or pupil against overwork, or to warn him of conditions which need further medical attention. The most important of all these is of course, the condition of the eyes, for certain errors of refraction express themselves in headaches and other disturbances not usually attributed to errors of refraction by the non-professional. An early correction of an error of refraction is of the greater importance to the pupil, both from the standpoint of his health and of success in his studies.

- I. Nutrition.
- II. Pilosity (1) Amount, (2) Colour.
- III. Muscular condition and development.
- IV. Condition of Circulatory system—determined by means of sphygmograph, and a stethoscope.
- V. Condition of Lungs—determined by inspection, palpation, percussion and auscultation.
- VI. Condition of the Eyes—determined through the use of ophthalmological instruments of diagnosis. (1) Vision. (2) Error of Refraction? (3) Disease?
- VII. Condition of the Ear—determined (1) by means of an otoscope which, however, was used only when the (2nd) test—sharpness of hearing—indicated it. (2) The sharpness of hearing was determined by means of a Galton whistle.
- VIII. Acuteness of feeling—determined by means of the application of two points (usually those of a compass or of a pair of dividers) to the volar surface of a finger.

c. Historical Data.

The subject or one of the assistants records the Name, Age, Race, Nationality, Father's Business, number of brothers and sisters. If members of the immediate family have died, the cause of the death is recorded if known; past diseases are noted.

C. THE APPLICATION OF THE ANTHROPOMETRIC DATA.

a. The Methods.

After one has completed his observations, his work has really only begun. The work which remains to be done may be considered under two general heads:—

- (1) The computation of the averages or medians; and
- (2) The use of these values in deducing general conclusions and arriving at the laws of growth, of bodily proportion and of changes of proportion.

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The ease with which the computation of averages may be accomplished, depends upon the method of recording the observations. If they are recorded in tables in the order observed, the grouping of the observations according to age, &c., &c., can only be done at great expense of time. The method of recording the measurements of an individual upon a card was emphasised by Galton,¹ and is generally used in America. It has the great advantage of allowing as many and as intricate groupings and re-groupings as the investigator may desire, at the slight expense of time and attention required to rearrange the cards. As the individuals which the writer observed were homogeneous as to race, nationality, sex, social condition and physical development, it remained only to group them (1) as to age, which grouping was retained throughout the whole investigation, (2) as to the value of the different measurements. To illustrate the last grouping let us take for example the age, *nine years*; and the measurement, *Girth of Wrist*. Suppose that of 64 nine-year-old boys measured, 1 had a wrist-girth of 10·5 cm., 6 at 11 cm., 15 at 11·5 cm., 20 at 12 cm., 14 at 12·5 cm., 4 at 13 cm., 1 at 13·5 cm., 1 at 14 cm., 1 at 14·5 cm., and 1 at 15 cm. The groups contain from left to right 1, 6, 15, 20, 14, 4, 1, 1, 1, 1, cards respectively ranging from the lowest observed measurement to the highest, and representing equal intervals. The result of this grouping is to be recorded in a table. [See Table A, rubrics 1 and 2.]

TABLE A.
THE GIRTH OF WRIST AT 9 YEARS.

1	2	3
Girth.	Observations.	<i>a.</i>
cm.		cm.
10·5	1	10·5
11·0	6	66·0
11·5	15	172·5
12·0	20	240·0
12·5	14	175·0
13·0	4	52·0
13·5	1	13·5
14·0	1	14·0
14·5	1	14·5
15·0	1	15·0
	64 = <i>n</i>	773·0 = Σa

¹ The numbers refer to the literature catalogue at the end of the Paper.

Whether one proceeds, as just described, with cards, or whether the much more laborious method of grouping from a table comes eventually to this point common to both methods, i.e., the recording of the number of observations for each different value as shown in rubrics 1 and 2 of the table. From this point the ways diverge again, the one toward the computation of the *average* and the other toward the computation of the *median value*. If he wishes the former he uses the formula given *Stieda*,² *Schmidt*,³ *Lexis*,⁴

$$A = \frac{\Sigma a}{n}$$

In this formula *a* is the product of any value in rubric 1 and the number of observations of that value. [See rubric 3.] Σa is the sum of these products, and *n* is the number of observations. According to this formula the average girth of wrist of the 64 boys measured is ($773 \div 64 =$) 12.08. If one wishes the median value of the values in question, he determines it from an inspection of the grouping, or if the number of observations is very large he may use a simple arithmetical process. If one glances at rubric 2 of the table, he notices at once a "*principal group*," 20, on either side of which are groups decreasing in size in both directions from the principal group. Inasmuch as the groups 15, 6, 1, represent values less than that of the principal group, and groups 14, 4, 1, 1, 1, 1, represent values greater, we may call the former the "*minus groups*" and the latter the "*plus groups*." Inspection shows that there are as many observations above the principal group as below it. The median value (*M*) therefore equals 12 cm. As this is unusually simple case let us assume three typical cases. [Table B.] Case I shows group 20 to be the "*principal group*."

TABLE B.
THREE TYPICAL CASES OF GROUPING.

Girth of Wrist.	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0
Case I ..	1	1	5	14	20	15	6	2	0
Case II ..	1	4	6	14	15	12	8	3	
Case III ..	1	2	5	24	22	8	1	1	

¹ It is sometimes difficult to determine the "*principal group*," defines it as "the group which added to the sum of those at its right (or exceeds half the number of observations," i.e., $1 + 1 + 5 + 14 = 21$, and $21 > 32$. Therefore the 32nd man is in group 20, so group 20 is the "

we proceed to find the median value for each of these cases it is important to know whether the observer read and recorded the *centimetres and tenths* of cm. or the *nearest half centimetre*. The significance of the principal group will be quite different in the two methods, and the median value will be obtained in a different way. As my observations were recorded in centimetres and the nearest fourths above, expressed decimally, it is clear that the twenty observations of the principal group are distributed over the space between the values 12 cm. and 12.5 cm. We assume that they are evenly distributed. Let M = median value, a = value of "principal group," d = distribution of the groups, or the difference of the minimum values of two consecutive groups, which in this case equals 0.5 cm., G = number of observations in the principal group, Σm = total number of observations in the "minus groups," Σp = total number of observations in the "plus groups." The process of computing M can be expressed more clearly by the following mathematical formula, than by a word formula:—

$$(1) \quad \dots \dots M = a + \left[\frac{\Sigma m + \frac{G}{2}}{n} \times d \right]$$

$$(1') \quad \dots \dots M = (a + d) - \left[\frac{\Sigma p + \frac{G}{2}}{n} \times d \right]$$

The truth of these formulæ is so evident that they need no further explanation. Let me apply them both to Case I.

$$(1) \quad M = 12 + \left[\frac{21 + \frac{20}{2}}{64} \times .5 \right] = 12 + \left(\frac{31}{64} \times .5 \right) = 12.242$$

$$(1') \quad M = 12 + .05 - \left[\frac{23 + \frac{20}{2}}{64} \times .5 \right] = 12.5 - \left(\frac{33}{64} \times .5 \right) = 12.5 - 0.258$$

$$= 12.242$$

Case II.

$$(1) \quad M = 12 + \left[\frac{25 + \frac{15}{2}}{64} \times .5 \right] = 12 + \left(\frac{32.5}{64} \times .5 \right) = 12.254 -$$

$$(1') \quad M = 12 + .5 - \left[\frac{24 + \frac{15}{2}}{64} \times .5 \right] = 12.5 - \left(\frac{31.5}{64} \times .5 \right) = 12.5 - (.246 +$$

$$= 12.254 -$$

group." When the groups are very large, as was the case in Porter's observations of over 30,000 St. Louis school children, several central groups may be nearly equal in size, and the "principal group" may even be smaller than one minus or plus groups.

III is a somewhat unusual one: $\Sigma m = \Sigma p$, no "principal group." The formula may be applied readily, however, if we use $a = 11.5$.

$$(1) \quad M = 11.5 + \left[\frac{32 + \frac{0}{2}}{64} \times .5 \right] = 11.5 + 0.25 = 11.75$$

$$(1') \quad M = 11.5 + .5 - \left[\frac{32 + \frac{0}{2}}{64} \times 0.5 \right] = 12 - 0.25 = 11.75$$

Our conception of median values does not admit of the expression being applied for example to the average size of the grains of sand on the seashore, but only in cases where we deal with a type-form. One may correctly seek the median weight of the grains of wheat of a particular variety, grown under similar circumstances. In other words one may find the median value of a type whose variations are due to accidental causes. Of the general application of this principle, *Quetelet*⁶ said, "Cette loi des causes accidentelles n'est point particulière à l'homme, elle s'observe sur tout les êtres vivants de la création, sur tous les groupes que l'on est convenu de désigner par le nom d'espèces." *Galton*¹ followed *Quetelet*'s lead and always used the median. That it is not generally used may be shown from *Stieda*'s² statement: "In den anthropologischen Handbüchern von Broca, Topinard u. Roberts befindet sich keine andere Angabe als die Methode der arithmetrische Mittelzahl, so auch anthropologische Statistiken in allgemein."³ When the number of observations is large

¹ The method given above was the method applied in the writer's computations. It may be worthy of note that when the measurements have been recorded in *nearest half centimetres*, the formula must be changed. Take for example Case I. The 20 observations in the principal group are not distributed between 12.0 and 12.5 cm., but between 12 - 0.25 and 12 + 0.25, in other words the chances are that there will be as many below 12 cm. as above in value. With this conception of the principal group, it is clear that M be less than a ; in the above described procedure it is *always more than*. The following formula may be used:—

$$(2) \quad M = \left(a - \frac{d}{2} \right) + \left[\frac{\Sigma p + \frac{G}{2}}{n} \times d \right]$$

$$(2') \quad M = \left(a + \frac{d}{2} \right) - \left[\frac{\Sigma m + \frac{G}{2}}{n} \times d \right]$$

For Case I, $M = 11.75 + 0.258 = 12.008$.

For Case II, $M = 11.75 + 0.246 = 11.996$.

For Case III.—As there is no principal group we must take a equal 11 i.e., midway between the highest minus value and the lowest plus value, then $M = 11.75 + 0.25 - 0.25 = 11.75$.

² In the Anthropological Handbooks of Broca, Topinard and Roberts, finds only the arithmetical average, the same is true for anthropological statistics in general.

no essential difference between the average and median value. There is, however, an essential difference in the time required to obtain them, and this difference is in favour of the median value. If the number of observations is small, there is no essential difference in the time required to obtain these two results, but there is an essential difference in the value of the results, and that difference is in favour of the median value. These are the considerations which actuated the writer in the choice of the median value rather than the average. Having found the median value of each measurement for each age, these values were tabulated.

(2) Having collected and prepared the raw material for the solution of the question in hand, there remains yet the comparison of the median or type values and the deduction of laws. In order to facilitate the comparison of the median values with each other, the ratio of each one to the height for that age has been computed and appears in the rubrics headed "ratio" in the Anthropometric Table I. For many centuries artists took the length of the head as a basis of ratios or "modulus." For the use of the artist who deals with ideal figures, this has much to recommend it. If one glances at the anthropometric table he will find that scarcely another measurement undergoes so great a change of ratio, compared with all other parts of the body, as does the head. For anthropological purposes it is quite unfit to be used as a modulus. *Carus* and others used the vertebral column. The difficulty of its exact measurement, with the fact that it has been so seldom measured by recent anthropologists, makes this theoretically perfect modulus practically useless. In this investigation the writer has used the theoretically somewhat objectionable modulus—*Height of Body*—for the following

(1) It may be easily and exactly measured. (2) It is the most common measurement made, and therefore admits of a great mass of recent anthropometric data. (3) It has already been used as a modulus to a limited extent. (4) In the largest measurement, all ratios are less than unity. Its variation is in a general way parallel to that of the other measurements.

The next step was the grouping of the length measurements of the joint, trunk and muscle girths, and the reduction of the totals to percentages of the median values for nine years.

II.) The investigation of the relation of weight to frame and of the relation of lung capacity to strength and to frame, occasioned the construction of Table III.

b. *The Results.*

a. *General Changes of Proportion.*—1. Of primary importance is the consideration of the relation between *lengths* and *girths*.

An inspection of the "reduced" heights and lengths (Table II) shows these to be practically parallel. The reason for this is clear; two of the length measurements are the most important factors in the changes of height; two others, length of the arm segments, naturally follow a law of growth similar to that of the legs (see 7, p. 35); while the foot must make its growth *pari passu* with the increasing height in order to form an adequate base of support. The modulus—Height of Body—must therefore be used to represent the growth in lengths. The girth measurements have been divided into three classes—joint-girths, trunk-girths, and muscle-girths. (Table II.)

The totals of each of these classes have been reduced to a percentage series with that of nine years as a base. The average of these three classes may represent the total girths of the body.

If the percentage series of heights be represented by a curve, it will be found that from 10 to 12 the increase is *less* rapid than during the preceding period; from 12 to 13 *more* rapid; from 13 to 14 *less* rapid; from 14 to 15 *more*; after 15 each annual increase is less than that of the preceding year. If the percentage series of total girths be represented by a curve, the rate of growth of the 9th year will be seen to continue through the 10th, thus surpassing the height. (See Plate I.) From the 11th to the 13th year the increase is *less* rapid and is surpassed by the height; from 13 to 14 *more* rapid and surpasses the height; from 14 to 15 the girths are again surpassed by the height, but during the 16th year the girths gain a permanent and ever increasing ascendancy. That these curves cross each other four times between the 10th and 16th year is an exceedingly interesting fact. If subsequent investigations show the crossing of girth and length curves to be a constant phenomenon, it may be considered as one of the most important laws of growth. A reasonable interpretation seems to be; that the body widens out, then takes an upward shoot, then widens out preparatory to another upward growth. In other words, seems that the body cannot grow rapidly in both directions at the same time. To make such a phenomenon possible, it is necessary that the curve of heights should show at least one period of rapid increase. The curve of heights shows such periods, viz., 12 to 13 and 14 to 15. *Bowditch*⁸⁻¹⁰ found two waves of height-growth, 10 to 11 and 13 to 15. *Pagham* found one pronounced wave extending from the 13th to 15

17th year. Key¹²⁻¹³ found two—12 to 13 and 15 to 16, while *Hotelmann*,¹⁴ who measured Hamburg children, found two—12 to 13 and 14 to 15.

2. The growth in height is due largely to increase in length of long bones. If we can compare the girth of bones with their length we shall find the same thing is true of bone growth as of general body growth. Unfortunately, no bone-girths were taken. The nearest approach to such are the joint-girths which though including tendons, ligaments, and even in some cases adipose tissue, nevertheless include nearly as large a proportion of bone tissue as does the height; and, fortunately, the parts of bones included in joint-girths are the parts which one would expect to take part in this alternate wave growth if any part of the bone does. Admitting all the imperfections of the procedure, we will trace the curve. (See Plate II.) The increase from 9 to 12 is unchanged, but when the bones begin to increase rapidly in their vertical dimension, from 12 to 13, we find the increase of the lateral dimension essentially retarded; and when the vertical dimension undergoes its second retardation, between 13 and 14, the joint-girths make an increase which more than makes up for their previous retardation. An inspection of the curves for joint-girths and muscle-girths makes it clear that this demonstrated crossing of the curves representing bone-girths and lengths is *not* influenced by the development of muscles (which cause the increase of tendons and fascia), because the retardation and acceleration of joint increase is in every case more marked and more prompt than that of muscle increase. In fact there is no essential change in muscular development until after the skeleton has nearly reached its growth. At 16 the muscular system begins a rapid development which begins in the 17th year to affect the joint-girths, and continues to affect them during the whole subsequent period of growth, causing a divergence between the curves of joint-girths and height.

This latter effect of the muscular development is probably partly due to increase of tendon and fascia, but also largely due to actual growth of bone prominences as well as general increase volume of the epiphyses due to muscle stresses and strains. It seems then to be established from the data used, that a rapid increase of bone in one dimension is accompanied by a less rapid increase in the dimension transverse to it.

3. The trunk-girths are affected (1) by skeletal development; (2) by muscular development; and (3) by the development of organs of digestion and respiration. Of course among older individuals the accumulation of adipose tissue is a strong factor, among athletic boys the accumulation of fat is so rare that it invariably fails to affect the *median value*.

Which of the three factors just enumerated is the strong? If the first, then we shall expect the curve to be decidedly undulating between 9 and 15 years; if the second, we shall expect the curve to be parallel with that of muscle-girths especially after the 15th year.

Plate III shows that skeletal development must be a secondary factor. These four trunk measurements include considerable muscular tissue, especially girth of chest (vi) and girth of hip. That the curve is only secondarily affected by these is shown by the noticeable divergence after the 16th year, the time when the hip and chest muscles really begin their greatest development. What causes the very noteworthy upshoot in the curve of trunk-girths during the 15th and 16th years? The class — boys observed in this investigation were taking their last years of school in preparation for college and university life. A very large proportion of them were engaged in the athletic contests between rival schools. During a large part of the time they were under severe "training." The lung capacity was very important. The power of the system to digest and assimilate a large quantity of food was important. I believe that this rapid development of trunk is the index of a development of the organs of respiration and digestion which follows in immediate response to the requirements of the rapidly developing and severely taxed muscular system. It is, therefore, *indirectly* caused by muscular development, and *directly* caused by increased metabolism.

4. The resultant of total girth and height.

If, now, it is true that an acceleration of height increase is compensated by a retardation of girth increase, we should expect the resultant of these two series to represent the general growth. Such a line traced on Plate I, midway between the curves — height and total girths, will show slight retardation of the increase. There is then *slight* retardation of *general* growth. Bowditch,⁹ Key,¹³ Porter,⁵ et al., taking usually only height into consideration, naturally find a very essential retardation somewhere between the 9th and 14th years. This is usually attributed to the influence of approaching puberty. That theory is quite probable because it seems to have a constant time relation to puberty, but I believe that the retardation when *general growth* is taken into consideration, is less than is usually supposed.

5. *The Height of Pubes* is usually about one half the body height. Table I shows this measurement to be exactly half the height at 9 years and at 23 years 51 per cent.; i.e., the middle of the body has moved downwards to about the middle of the symphysis. This coincides perfectly with the results others have gotten.

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*The Height of Knee and the Length of Thigh.*¹ The measurement undergoes a relative retardation during the years when the *modulus* is rapidly increasing; but at 23 it has the same relation to the *modulus* as at 9. The length of thigh, however, is a strong factor in the increase of the *modulus* during the 12th, 13th and 14th years. If we compare the thigh with the leg (*crus*) we find that the latter seems to have reached its limit of growth by the end of the 16th year, while the former continues to grow for at least 3 years.

7. *The Length of Forearm and of Upperarm.* As these two measurements are homologous with the two discussed above (6) we may expect the same general facts to be true of these as of the leg and thigh; and such is the case. The ratios of the arm segments to the body undergo a metamorphosis similar to that noticeable in the leg segments, and, what is still more noteworthy, the relation of the forearm to the upperarm is the same as the relation of the leg to the thigh. There being nothing in the *present* use of these anterior and posterior limbs to cause a parallel course of development, we must seek the cause in the distant *past*.

8. The proportional girth of chest decreases during the years of rapid increase of the *modulus*, but after the 13th year undergoes a noticeable increase through the whole period observed even after bone and muscle development have practically ceased. This may be accounted for in part by the increasing bodily activity requiring more active respiration which in turn develops the chest.

The proportional girth of abdomen is variable, reaching a minimum at 15, increasing very much from 15 to 21 (it regains the original ratio), and showing a larger increment during the 23rd year than any other measurement. These changes of proportion may be due to athletic activity during the period from 13 to 18 and to the increasing adipose tissue later.²

In 1889 *Bertillon*¹³ said regarding *changes of proportion* "Les Proportions du Corps humain," "Revue Scientifique," T. 17, p. 524), "Quand dans un même groupe ethnique, on compare entre elles les mensurations des diverses parties du corps, on observe qu'à mesure que l'une d'entre elles s'accroît, les valeurs moyennes de tout les autres croissent en valeurs absolues, mais décroissent en valeurs relatives par rapport à la première prise comme mètre."

¹ The length of thigh does not appear in Table I, but it may be read in Table by taking the difference of height of pubes and height of knee.

Several other measurements admit of interesting discussions, but as of less interest than the topics to follow, they will be omitted.

Though this was sharply criticised the next year by *Mauouvier*,¹⁶ it was subsequently defended by *Hansen*,¹⁷ who said of Bertillon's Law of Proportion:—"Es ist ein Wachstumsgesetz vom grössten Interesse, dessen Erklärung im mathematisch-statistisches Problem darbietet, das nicht eher gelöst werden kann, bis auch das Verhältniss aller Körperteile genau untersucht ist."

The writer believes that he has made a number of observations sufficiently large, and a study of the proportions and their variations, sufficiently extended to justify the opinion that if in the application of this law one uses as the unit for comparison the part of the body *which is growing most rapidly*, the law is absolutely true—it is even axiomatic; if, however, one takes as a unit any part which is growing relatively slowly the law is untrue. It is an open question whether or not Bertillon intended to exclude the second application of the law; his statement certainly does not seem to exclude it. The writer ventures to formulate the following Law of Proportion:—

A Law of Proportion of the Human Body. When the vertical dimension of the human body is undergoing an acceleration of its rate of growth the horizontal dimensions undergo a retardation of their rate of growth; and conversely.

β. The Relation of Weight to Height and to Volume.

As early as 1838 *Quetelet*¹⁸ said ("Ueber den Menschen"), "In Allgemein weicht man wenig von der Wahrheit ab wenn man annimmt dasz das Quadrat des Gewichts der verschiedenen Lebensalter während der Entwicklung sich wie die fünften Potenzen des Wuchses verhalten"; . . . aber "bei vollkommen ausgewachsenen Personen von verschiedenen Grössen sich ungefähr wie das Quadrat des Wuchses zu einander verhalten."

Letting W = weight and H = height we have

$$\begin{aligned} (a) \quad & W^2 : w^2 :: H^5 : h^5 \text{ or } W : w :: H^{\frac{5}{2}} : h^{\frac{5}{2}} \\ (b) \quad & W : w :: H^2 : h^2 : \end{aligned}$$

Sometime later *Hutchinson*¹⁹ suggested the formula :

$$(c) \quad W : w :: H^3 : h^3 \text{ or } W^4 : w^4 :: H^{11} : h^{11}.$$

In 1869 *Gould*²⁰ applied Quetelet's formula (b) with not very satisfactory results because of not applying it in just the way Quetelet intended it should be applied. In his "Anthropometric," 1871, Quetelet applies not only his old formula (b) but a new formula (c) $W : w :: H^3 : h^3$, to the weights and heights from birth to 30 years of age. Plate IV shows the comparison graphically illustrated. It is evident that formula (c)

will be no improvement on those suggested before. Now, inasmuch as similar bodies of similar material vary in mass as the cubes of homologous dimensions, Quetelet's formula (c) should solve the relation of weight to height. Gould²⁰ gets at the truth of the situation when he says in this connection: "If the average proportions remained unchanged in men of different statures, we might expect their weights to vary as the cubes of their heights." Two distinct problems have been presented by the anthropologists (1) *What is the relation between weight and height?* The attempts to solve it are given in the formulæ above quoted. Any one of the above formulæ may be made a most valuable basis for comparisons in statistical and hygienic problems of anthropometry. Schmidt (E.)²¹ uses formula (b) in the comparison of city and country boys and girls (Plate V). The greater divergence of the curves for city boys demonstrates a greater disparity between weight and height. Geissler²² applies formulæ (a) for similar purposes and with similarly satisfactory results (Plate VI).

(2) *What is the relation of weight to volume?* As far as has come under the writer's notice this problem has not been solved. By immersing the body in water, the volume of the displaced water would equal the volume of the body. Having determined the weight and volume one may compare directly, and will find slight variations due to difference of specific gravity, which varies within narrow limits conditioned by relative amounts of fat and of bone and muscle.¹ This process was applied by the writer in the laboratory of Professor Sargent, Harvard University; it is, however, quite impracticable for general use. An approximate index of the body-volume must be sought in the measurements. Quetelet's⁶ trial proved that the cube of the height is not an index. Let the following combination be tried by way of experiment:—

- | | |
|--|---------------------------|
| (a) Interacromial Breadth cubed | (See Table III, rubric 3) |
| (b) Height × Depth of Chest × Breadth of Hips (" " " 4) | |
| (c) Height × Interacromial Breadth × Depth of Abdomen, H × I × A | (" " " 5) |
| (d) Height × Depth of Chest squared; H × DC ² (" " " 6) | |

That suggestions (a) and (b) do not fill the requirements is easily seen in the wide divergence of the percentage series of rubrics 3 and 4 from that of the weights (rubric 1). An inspection of rubrics 5 and 6 shows a remarkable coincidence of both with rubric 1. It will be noticed that after the 18th year the series obtained through trial (c) diverges essentially. I do not believe that it would continue to diverge. This brief

¹ Note must be taken of the degree of inflation of the lungs.

trial seems to indicate that one or the other of the following formulæ furnishes an approximate solution to the question :

The relation of weight to volume—

$$(\alpha) \dots\dots W : w :: H \times I \times A : h \times i \times a \text{ (suggestion c.)}$$

$$(\beta) \dots\dots W : w :: H \times \overline{DC}^2 : h \times \overline{dc}^2 \text{ (suggestion d.)}$$

Preference is given to formulæ (α) on theoretical grounds, because the volume is based on the product of three dimensions, while (β) is based on the product of one and the square of a second. Plate VII gives the curves of the series in rubrics 1, 5 and 6.

\gamma. The relation of lung capacity to weight, to volume and to strength.

That the development of the lungs must have a definite relation to metabolism is the first thought that presents itself. If we could measure metabolism, the problem might be easily solved. That the amount and intensity of metabolism is not dependent on weight is clear, because some of the most important factors in the weight—adipose and skeletal tissues—are only slight factors in metabolism. That it is further not dependent on volume is also clear, because even muscular and glandular tissue may participate in very sluggish or very active metabolism. May it not be true that general bodily strength will furnish us with a reliable index of lung capacity? The following considerations seem to indicate such a relation: (1) The strength varies with the development of the muscular system. (2) The metabolism varies with the development and activity of the muscular system, directly through muscle respiration and indirectly through glandular activity. (3) The respiratory activity varies with the amount of metabolism. (4) The lung capacity varies with the respiratory activity. *Therefore THE LUNG CAPACITY VARIES WITH THE STRENGTH. (Expressed mathematically*

$$Lc \propto S \text{ or } Lc : lc :: S : s.)$$

To see that lung capacity has no relation to weight, see Table III, rubrics 1 and 7. To see that it has not a marked relation to general bodily volume is clear after a comparison of rubric 7 with rubrics 4, 5 and 6. The strength tests involved all of the principal groups of muscles. The result of the tests are given in Table IV. The total strength (reduced) is given in rubric 9, Table III, while the lung capacity is reduced to a percentage series having the value for 14 years as base. An extension of the observations beyond the 23rd year would have no especial value because both lung capacity and strength reach a maximum about that time. A comparison of these two variables a

Human Body during the Period of Growth.

ages below 14 years should be made before the value of the above suggested formula can be sufficiently tested. With the data at hand as a basis I believe I am justified in the conclusion that—

The lung capacity varies with the strength.

D. THE RESULTS FORMULATED.

1. *A law of Proportion of the Human Body.*—When the vertical dimension of the human body is undergoing an acceleration of its rate of growth, the horizontal dimensions undergo a retardation of their rate of growth; conversely, when the horizontal dimensions of the human body are undergoing an acceleration of their rate of growth, the vertical dimension undergoes a retardation of its rate of growth.

2. The weight, at different ages during the period of growth, varies either as the product of the *height*, the *inter-acromial breadth* and the *depth of abdomen*, or as the product of the height, and the depth of chest *squared*.

$$(a) \dots W : w :: H \times I \times A : h \times i \times a$$

$$(b) \dots W : w :: H \times DC^2 : h \times dc^2.$$

3. The capacity of the lungs at different ages varies as the total muscular strength.

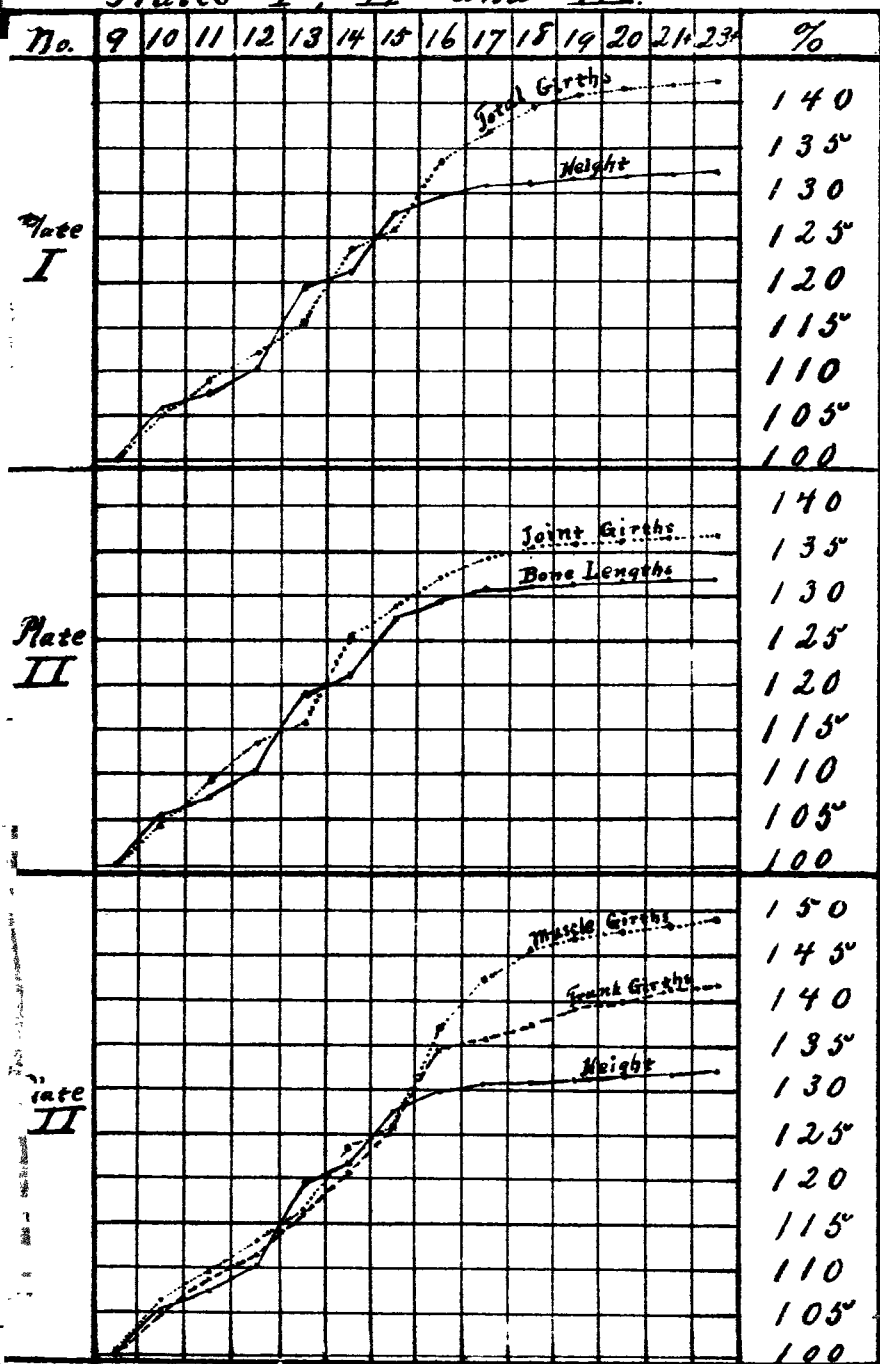
$$Lc :: lc :: S : s$$

Catalogue of Literature cited in the preceding Paper.

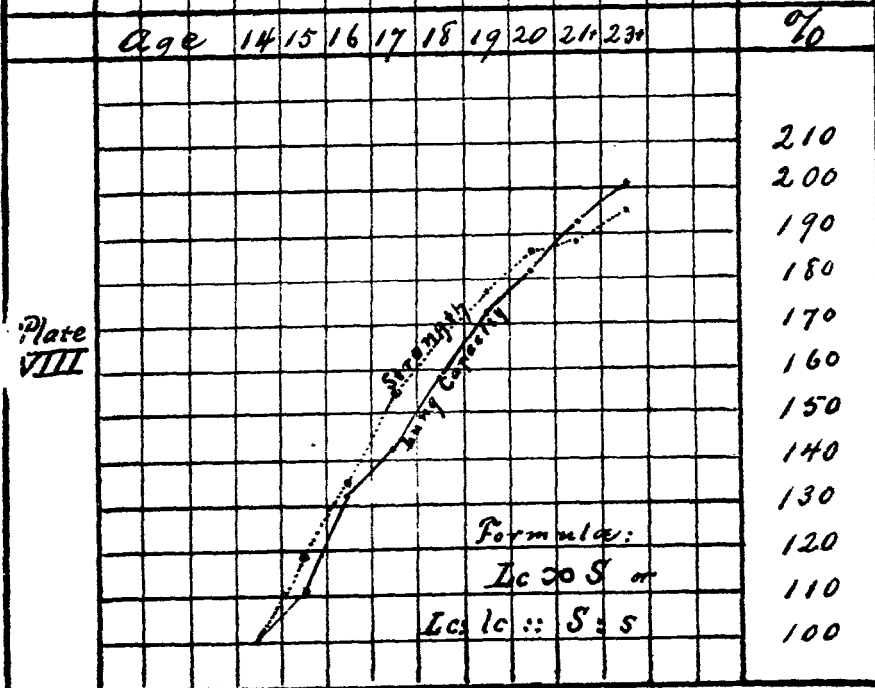
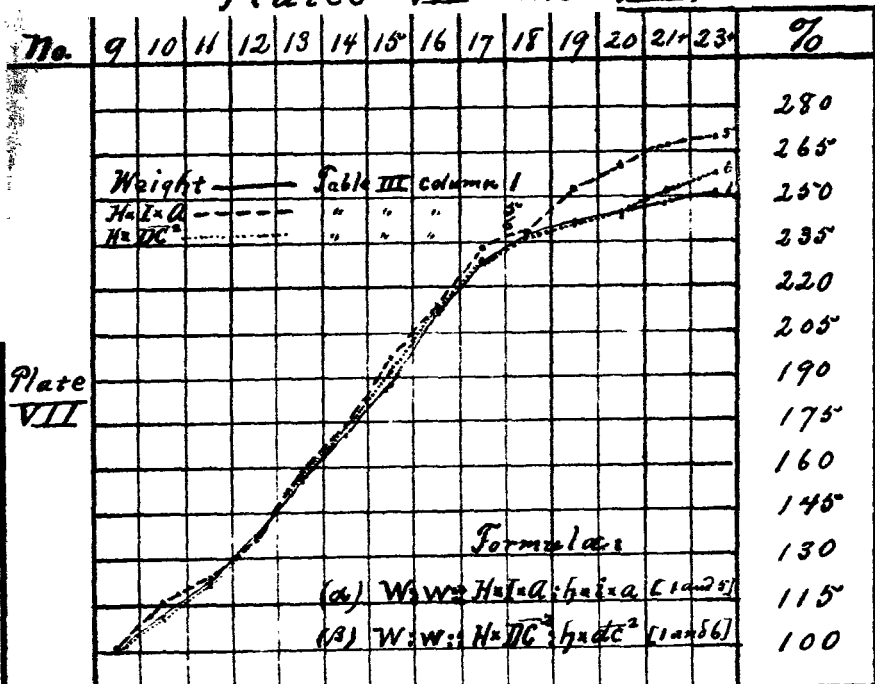
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Plates I, II and III.



Plates VII and VIII.



ANTHROPIC TABLE I.

No.	Age. No. of Observations.	9		10		11		12		13		14		15	
		Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.
I	Height of body, <i>Modulus</i>	130.0	—	137.0	—	140.0	—	143.9	—	154.5	—	158.3	—	165.8	—
II	" knee ..	40.0	0.308	41.9	0.306	42.9	0.306	43.8	0.304	47.0	0.304	48.0	0.303	50.8	0.303
III	" pubes ..	65.0	0.500	68.0	0.496	71.0	0.496	73.0	0.501	78.5	0.508	80.8	0.510	83.7	0.505
IV	Girth of head ..	53.2	0.409	53.4	0.390	53.5	0.381	53.6	0.372	53.9	0.349	54.5	0.349	55.3	0.334
V	" neck ..	27.0	0.208	27.5	0.201	28.0	0.200	28.7	0.197	29.8	0.193	30.9	0.195	32.6	0.197
VI	" chest ..	64.0	0.491	66.0	0.482	67.8	0.484	70.7	0.491	74.2	0.481	77.7	0.490	82.1	0.495
VII	" " at 9th rib	59.0	0.458	63.6	0.464	64.2	0.459	66.6	0.462	70.0	0.453	71.7	0.452	74.6	0.450
VIII	" abdomen ..	56.0	0.430	58.0	0.423	60.0	0.428	61.0	0.423	62.0	0.402	64.3	0.406	66.6	0.402
IX	" hips ..	62.4	0.480	66.5	0.485	69.1	0.494	71.5	0.496	75.3	0.488	78.0	0.492	82.0	0.495
X	" thigh ..	37.1	0.285	39.1	0.286	40.1	0.286	41.0	0.285	42.5	0.275	44.5	0.274	46.1	0.278
XI	" knee ..	26.2	0.202	27.8	0.203	28.6	0.204	29.6	0.205	31.0	0.201	32.8	0.206	34.2	0.206
XII	" calf ..	24.7	0.190	26.1	0.190	26.8	0.191	27.7	0.193	28.8	0.186	30.1	0.190	31.6	0.191
XIII	" ankle ..	15.9	0.122	16.8	0.123	17.4	0.124	18.0	0.125	18.7	0.121	19.4	0.122	20.2	0.122
XIV	" upperarm ..	18.7	0.144	19.8	0.145	20.4	0.146	21.3	0.148	22.5	0.146	23.9	0.151	25.5	0.154
XV	" elbow ..	17.8	0.137	18.8	0.137	19.3	0.138	20.1	0.139	20.9	0.136	22.2	0.140	23.7	0.143
XVI	" forearm ..	17.6	0.135	18.6	0.136	19.2	0.137	20.1	0.139	21.0	0.136	22.2	0.140	23.7	0.143
XVII	" wrist ..	12.0	0.093	12.7	0.093	13.4	0.096	14.0	0.097	14.6	0.095	15.1	0.095	15.6	0.094
XVIII	Depth of chest ..	14.1	0.107	14.6	0.107	15.1	0.108	15.7	0.109	16.2	0.105	16.9	0.107	17.7	0.107
XIX	" abdomen ..	13.7	0.105	14.4	0.105	14.7	0.105	15.1	0.105	15.7	0.102	16.2	0.102	16.7	0.101
XX	Breadth, intercostal ..	29.5	0.226	31.0	0.226	32.0	0.229	33.3	0.231	34.6	0.224	36.0	0.227	37.5	0.226
XXI	" " intertrochanteric ..	22.0	0.169	23.0	0.168	24.0	0.171	25.3	0.175	26.5	0.172	28.0	0.176	29.5	0.178
XXII	Length of upperarm ..	26.3	0.202	27.8	0.203	28.7	0.205	29.5	0.207	32.0	0.207	33.4	0.211	35.1	0.212
XXIII	" forearm ..	84.8	0.268	86.7	0.269	87.8	0.270	89.1	0.270	90.8	0.264	92.2	0.266	94.5	0.268
XXIV	" foot ..	19.7	0.152	21.0	0.153	21.7	0.155	22.5	0.156	23.9	0.155	24.5	0.155	25.5	0.154
XXV	Weight ..	26.5	0.204	30.0	0.219	32.5	0.232	36.5	0.254	40.7	0.264	45.2	0.285	49.3	0.297

ANTHROPO-METRIC TABLE I—continued.

No.	Age.	16		17		18		19		20		21 and 22		23 and over	
		Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.	Median.	Ratio.
	No. of Observations.	284		290		240		155		180		120		90 = 2434	
	Measurement.														
I	Height of body, <i>Modulus</i>	168.8	—	170.5	—	171.0	—	171.4	—	171.7	—	172.0	—	172.0	—
II	" knee ..	51.6	0.305	52.5	0.306	52.5	0.307	52.7	0.307	52.8	0.308	52.9	0.308	53.0	0.308
III	" pubes..	86.7	0.508	87.0	0.510	87.2	0.511	87.5	0.511	87.6	0.510	87.7	0.510	87.7	0.510
IV	Girth of head ..	55.9	0.331	56.3	0.331	56.5	0.331	56.7	0.331	56.8	0.331	57.0	0.331	57.0	0.331
V	" neck ..	33.5	0.199	34.3	0.201	35.0	0.205	35.4	0.206	35.6	0.207	36.0	0.209	36.0	0.209
VI	" chest ..	84.4	0.500	86.6	0.508	88.4	0.517	90.3	0.527	90.9	0.529	91.2	0.530	91.5	0.532
VII	" " at 9th rib	77.6	0.460	79.9	0.469	81.6	0.477	82.7	0.483	88.7	0.488	84.6	0.482	85.2	0.495
VIII	" abdomen	69.5	0.412	72.4	0.425	72.6	0.425	73.0	0.426	73.7	0.429	74.8	0.435	76.0	0.442
IX	" hips ..	86.0	0.509	88.4	0.518	90.0	0.526	90.3	0.527	90.6	0.528	90.9	0.528	91.0	0.529
X	" thigh ..	43.9	0.290	50.9	0.289	51.6	0.300	52.0	0.305	52.2	0.304	52.2	0.303	52.2	0.303
XI	" knee ..	35.0	0.207	35.5	0.208	35.8	0.209	36.0	0.210	36.1	0.210	36.2	0.211	36.2	0.211
XII	" calf ..	33.4	0.198	34.5	0.202	35.1	0.205	35.4	0.206	35.6	0.207	35.7	0.207	35.8	0.208
XIII	" ankle ..	20.7	0.128	21.1	0.124	21.3	0.125	21.4	0.125	21.5	0.125	21.6	0.126	21.6	0.126
XIV	" upperarm ..	27.3	0.161	28.7	0.168	29.7	0.174	30.3	0.177	30.5	0.178	30.5	0.177	30.5	0.177
XV	" elbow ..	24.0	0.142	24.8	0.146	25.0	0.146	25.2	0.147	25.3	0.147	25.4	0.148	25.4	0.148
XVI	" forearm ..	24.7	0.146	25.4	0.149	26.0	0.151	26.4	0.154	26.6	0.155	26.8	0.155	27.0	0.157
XVII	" wrist ..	16.0	0.095	16.2	0.095	16.4	0.096	16.5	0.096	16.5	0.096	16.6	0.096	16.6	0.096
XVIII	Depth of chest ..	18.2	0.108	18.7	0.110	19.0	0.111	19.0	0.112	19.3	0.112	19.4	0.112	19.6	0.114
XIX	" abdomen	17.2	0.102	17.8	0.104	18.3	0.107	18.8	0.110	19.1	0.111	19.4	0.111	19.6	0.114
XX	Breadth, interacromial ..	89.3	0.285	40.6	0.239	41.3	0.242	41.8	0.244	42.2	0.246	42.4	0.247	42.4	0.247
XXI	" intertrochanteric ..	80.5	0.181	31.7	0.186	32.3	0.189	32.5	0.190	32.7	0.190	32.9	0.191	33.0	0.192
XXII	Length of upperarm ..	36.1	0.214	36.8	0.216	36.9	0.216	37.0	0.216	37.0	0.216	37.0	0.216	37.0	0.216
XXIII	" forearm ..	45.8	0.271	46.4	0.272	46.6	0.272	46.8	0.273	46.9	0.273	47.0	0.273	47.0	0.273
XXIV	" foot ..	25.9	0.153	25.9	0.152	26.9	0.151	26.9	0.151	26.0	0.151	26.0	0.151	26.0	0.151
XXV	Weight ..	57.0	0.338	60.7	0.355	62.9	0.368	63.8	0.372	64.7	0.378	65.8	0.383	66.6	0.387

TABLE II.
SHOWING THE CHANGES OF PROPORTION BETWEEN LENGTHS AND GIRTHS.

Measurement.	9	10	11	12	13	14	15	16	17	18	19	20	21-22	23+
Height of body—Modulus	130.0	137.0	140.0	143.9	154.4	158.5	165.8	168.8	170.5	171.0	171.4	171.7	172.0	172.0
LENGTH MEASUREMENTS.														
Height of knee	40.0	41.9	42.9	43.8	47.0	48.0	50.3	51.6	52.2	52.5	52.7	52.8	52.9	53.0
" pubes	65.0	68.0	71.0	73.0	78.5	80.8	83.7	86.7	87.0	87.2	87.5	87.6	87.7	87.7
Length of upperarm	26.3	27.8	28.7	29.5	32.0	33.4	35.1	36.1	36.8	36.9	37.0	37.0	37.0	37.0
" forearm..	34.8	36.7	37.8	39.0	40.8	42.2	44.3	45.8	46.4	46.6	46.8	46.9	47.0	47.0
" foot	19.7	21.0	21.7	22.5	23.9	24.5	25.5	25.9	25.9	25.9	25.9	26.0	26.0	26.0
Total	185.8	195.4	202.1	207.8	222.2	228.9	238.9	246.1	248.3	249.1	249.9	250.3	250.6	250.7
JOINT GIRTHS.														
Girth of knee	26.2	27.8	28.6	29.6	31.0	32.8	34.2	35.0	35.5	35.8	36.0	36.1	36.2	36.2
" ankle	15.9	16.8	17.4	18.0	18.7	19.4	20.2	20.7	21.1	21.3	21.4	21.5	21.6	21.6
elbow	17.8	18.8	19.3	20.1	20.9	21.9	23.0	24.0	24.8	25.0	25.2	25.3	25.4	25.4
" wrist	12.7	12.7	13.4	14.0	14.6	15.1	15.6	16.0	16.2	16.4	16.5	16.5	16.6	16.6
Total	72.6	76.1	78.7	81.7	85.2	89.2	93.0	95.7	97.6	98.5	99.1	99.5	99.8	99.8

TABLE II—continued.

TRUNK GIRTHS.

Measurement.	9	10	11	12	13	14	15	16	17	18	19	20	21-22	23†
Girth of chest VI..	64.0	66.0	67.8	70.7	74.2	77.7	82.1	84.4	86.6	88.4	90.3	90.9	91.2	91.5
" " VII	59.6	63.6	64.2	66.6	70.0	71.7	74.6	77.6	79.9	81.6	82.7	83.7	84.6	85.2
" " abdomen	56.0	58.0	60.0	61.0	62.0	64.3	66.6	69.5	72.4	72.6	73.0	73.7	74.8	76.0
" " hips	62.4	66.5	69.1	71.5	75.3	78.0	82.0	86.0	88.4	90.0	90.3	90.6	90.9	91.0
Total ..	242.0	254.1	261.1	269.8	281.5	291.7	305.3	317.5	327.3	332.6	336.3	338.9	341.5	343.7

MUSCLE GIRTHS.

Girth of thigh	37.1	39.1	40.1	41.0	42.5	44.5	46.1	48.9	50.9	51.6	52.0	52.2	52.2	52.0
" " calf	24.7	26.1	26.8	27.7	28.8	30.1	31.6	33.4	34.5	35.1	35.4	35.6	35.7	35.8
" " upper arm	18.7	19.8	20.4	21.3	22.5	23.9	25.5	27.8	28.7	29.7	30.3	30.5	30.5	30.5
" " forearm	17.6	18.6	19.2	20.1	21.0	22.2	23.7	24.7	25.4	26.0	26.4	26.6	26.8	27.0
Total ..	98.1	103.6	106.5	110.1	114.8	120.7	126.9	134.3	139.5	142.4	144.1	144.9	145.2	145.3

Height, reduced	100.0	105.4	107.7	110.3	118.5	122.0	127.5	129.8	131.1	131.6	131.9	132.1	132.3	132.3
Lengths "	100.0	105.2	108.7	111.3	119.6	123.4	128.6	133.6	136.6	134.0	134.7	134.9	135.0	135.0
Joint girths "	100.0	104.9	108.4	112.6	117.2	125.7	128.1	131.9	134.5	135.6	136.5	137.0	137.4	137.4
Trunk "	100.0	105.0	107.9	111.6	116.3	120.7	126.2	134.3	135.3	137.4	139.0	140.0	141.0	142.0
Muscle "	100.0	105.6	108.5	112.4	117.0	123.0	126.4	136.9	142.2	145.2	146.9	147.6	148.0	148.2
Total " (average)	100.0	105.2	108.3	112.2	116.8	123.1	126.9	131.3	137.3	139.4	140.8	141.5	142.1	142.5

TABLE III.

THE RELATION OF THE WEIGHT TO THE LINEAR DIMENSIONS, AND OF LUNG CAPACITY TO STRENGTH.

Age.	1	2	3	4	5	6	7	8	9
	Weight. — Reduced to a percentage series.	Interacromial Breadth. — Squared and Reduced.	Interacromial Breadth. — Cubed and Reduced.	Height × Depth, Chest × Breadth Hips. — Reduced.	Height × Interacromial × Depth Abdomen. — Reduced.	Height × Depth Chest, Squared. — Reduced.	Lung Capacity. — Reduced.	Lung Capacity. — Reduced from 14 years.	Strength. — Reduced.
9	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0
10	113·2	110·5	116·0	119·2	115·5	112·1	110·3	111·4	119·3
11	122·7	117·4	127·6	127·7	124·4	122·6	120·6	132·1	134·5
12	137·7	127·4	143·7	140·8	135·9	136·8	132·3	142·9	154·6
13	153·6	137·5	161·4	163·1	158·4	155·6	154·4	157·7	166·9
14	170·9	148·8	181·8	188·8	174·2	173·8	178·0	173·4	177·8
15	180·6	161·6	205·4	200·6	196·1	190·8	198·5	181·7	186·6
16	215·1	177·5	236·4	230·6	215·5	214·7	235·3	192·0	198·7
17	229·0	189·3	257·1	248·7	232·7	228·9	254·4	202·3	195·4
18	237·3	196·0	274·4	258·2	237·4	237·0	274·4		
19	240·8	200·7	284·5	261·4	254·4	240·0	307·7		
20	244·5	204·4	292·7	266·6	261·3	245·5	323·6		
21 +	248·3	206·6	295·9	271·5	267·3	251·1	341·7		
23 +	251·3	206·6	295·9	274·3	270·3	259·2	360·3		

TABLE IV.—STRENGTH.

Age.	14	15	16	17	18	19	20	21 +	23 +
	kilos.	kilos.	kilos.	kilos.	kilos.	kilos.	kilos.	kilos.	kilos.
Back ..	88	105	112	123	131	140	145	146	148
Legs.. ..	114	125	146	162	168	178	190	195	209
Chest ..	31	35	40	43	46	48	50	50	50
Upperarm ..	27	44	51	77	92	100	100	100	100
Forearm ..	24	33	33	34	37	41	45	45	45
Total ..	284	339	382	439	474	505	530	536	550

NOTES on the LANGUAGES SPOKEN in MADAGASCAR.

By J. T. LAST.

Origin of Language, general belief, Malagasy, of African or Arabic origin.—From the time since Madagascar first became known to Europeans, until a comparatively recent date, there was a general impression and belief that the inhabitants of the island came originally of an African stock, and that the language, if not African, was a corrupted form of Arabic. There was much to induce and sustain this belief especially in earlier days, when the language of the Malagasy was but little known, even by those who wrote and spoke about it. Certainly Arabic was understood by many in those days, but none of the writers on Madagascar had any knowledge of the East African tribes and languages, especially Swahili and Makua, through which the African element, if any, would most probably have come to Madagascar; and but little was known of the languages of the far east; so far indeed, that none would naturally think that the Malagasy owed their origin and language to such a distant place.

It was most natural that people should regard Africa as the original home of the Malagasy, if only on account of its approximate nearness, besides the general appearance of the Western Malagasy seemed to point that way. It was also quite reasonable in those days when the study and comparison of languages was so little followed, that people should conclude that Malagasy was a corrupted form of Arabic, judging from the number of Arabic forms and words in use in the language, even some recent writers have endeavoured to maintain "that Malagasy is an African language." Let us see how far such a view concerning the Malagasy language can be supported.

First knowledge of Madagascar ; a possibility that Madagascar may have been reached by Arabs before the Christian era.—There is no known record bearing testimony to a knowledge of the existence of the island of Madagascar before the beginning of the Christian era : there is little or nothing to show that the East Coast of Africa, south Cape Guardafui, was known before that time. But when it is known that ships passed up and down the Red Sea and along the Arabian coast, to the Persian Gulf probably, and perhaps to India, it is quite reasonable to suppose that some of the ships or dhows may have also rounded Cape Guardafui, and sailed down the East African coast, and it is almost as reasonable to think that if they went so far they may also have reached the Comoro Islands and Madagascar.

First century—Theophilus and Diogenes ; Dioscorus.—Shortly after the commencement of the Christian era, two navigators, Theophilus and Diogenes, passed Cape Guardafui, and reached the port of Rhapta, by some thought to be the same as the present Zanzibar, but more probably a point near Mozambique in about latitude 15° S. Soon afterwards the pilot Dioscorus, doubled Cape Guardafui and proceeding still further south arrived at Cape Prasum in about latitude 22° S. near the mouths of the Zambezi river.

Second century—Ptolemy.—In Ptolemy's time, second century, the passage between Cape Guardafui and Cape Rhaptum was apparently frequently made, the merchants who were questioned by him stating that the voyage between the two places was generally made in fifteen days.

Third century—Arrian Menuthias=Madagascar.—From the description given by Arrian there is much reason to think that when he speaks of the island of Menuthias, he is referring to Madagascar. His remarks would scarcely apply to any other island off the East African coast, his description of the rivers, crocodiles, land-tortoises, canoes, sea-turtles and wicker-work weirs for catching fish, apply exactly to Madagascar of the present day but to none of the other islands.

Tenth century—Masudi. Djafouna=Madagascar.—For six hundred years after the time of Arrian and Marcian there is little or no reference made to Menuthias or any island which would lead one to think that Madagascar was alluded to—but Masudi, in his book, "Moroudj ad-Dhahab," speaks of the sea of the countries of "Berbera, and Djafouna," and the island of Kanbalou. Probably the island of Kanbalou is Anjouan or one of the Comoro islands, and Djafouna is the island of Madagascar. It is scarcely possible that Kanbalou can refer to Madagascar, for that island has never been ruled by Arabs or their descendants, whereas the Comoros have been governed by

Arabs and their descendants for many centuries. Masudi says that Kanbulou was conquered by the Arabs in 750 A.D.

Twelfth century—Edrisi. *Chezbezat = Madagascar.*—Another two centuries are passed, and we find Edrisi, in his work "*Nozhat al-Moschtak*," describing several islands which lie off the East African coast. When speaking of the smaller islands he evidently refers to the Comoros, the island Andjiyeh pointing to Anjouan, and Chezbezat to Madagascar. Edrisi speaks of the pearls, sugar cane, and other things found in or about Chezbezat. It is well known to all who have travelled along the west coast of Madagascar, that pearl-oysters are to be found near the coast nearly the whole length of the island.

Thirteenth century—Marco Polo. *Madagascar refers probably to Magadoza.*—From the time of Edrisi to that of the celebrated Venetian traveller, Marco Polo, little was added to what was already known of the island we call Madagascar—but several names are given by various writers which may refer to that place, as, Komr, Serendah, El-Komr, Malichu and Mahal. The first writer who uses the name of Madagascar, or rather Madeigascar, is Marco Polo, but even he could scarcely have been speaking of the island now known by that name, it is far more probable he was referring to the district and town of Magadoza, on the east coast of Africa, south of Cape Guardafui. He was under the impression that the place was an island, but the remarks he makes about elephants and camels are sufficient to show that he could scarcely have been referring to the island of Madagascar.

Madagascar discovered by Fernam Saares and Joas Gomez d'Alreu in 1506, or perhaps a little earlier.—Previous to Marco Polo's time all the information we have of Madagascar is from Arabian sources. After him a number of Europeans made maps and wrote of the place, but added nothing to previous knowledge, and it was not till the beginning of the 16th century, when the island was discovered by the Portuguese, that we get any definite and reliable information about Madagascar.

Marco Polo's statement. Portuguese navigators. 1650, Manuel de Faria. The word "*Buqua*." *Sakalavas unacquainted with African languages.*—The statement made by Marco Polo went far to establish the idea that the language of the people of Madagascar is a form of Arabic, when he asserted that "its inhabitants follow the laws and customs of Muhamed." Since that time, till quite recently the prevailing idea regarding the origin of the language, was, that it was either derived from an African source, or that it was a corrupt form of Arabic. The Portuguese navigators who explored its coasts in the 16th and 17th centuries, thought the language of the people was African ;

and one of them, Manuel de Faria, in 1650 states that "from Massalege to Sadia" (on the west coast, viz., between Narendry Bay, latitude $14^{\circ} 14'$ S., and the Sadiha River in about latitude $19^{\circ} 10'$ S.) "the natives speak the same language with the Kafirs on the opposite coast of Africa, while in all the rest of the island, the native language, called 'Buqua,' is spoken." The use of this word "Buqua," which is only the Portuguese form of the Malagasy word "Boký," or "Buk" (as it might more correctly be spelt)=meaning a small animal of the mongoose family; points to the kind of people with whom the Portuguese associated whilst in Madagascar. This word is never used by the Malagasy in any reference to themselves or their country, but it is always used by the Swahilis and Arabs of Zanzibar and other places to denote the people and island of Madagascar. They have no other name for it. For instance, they say, "Mtu wa Bukini" = lit., a man of the place where the mongoose is, a man of Bukini, a man of Madagascar, or, Ntakwenda Bukini = I shall go to Bukini, or Madagascar. The final -ni, of Bukini, is only the Swahili locative suffix, the real word is "Buki." This word is known more or less all along the west coast, but the Sakalavas, the natives of that part of the country, never use it in reference to themselves, but simply to denote the animal of which it is the name. In the same manner, the Swahili give the Sakalavas the name of Makalalao = cockroaches. This use of the word Buki, or Buqua, shows that the Portuguese explorers must have met and associated with the Swahili-Arabs on the coast, and not with the real natives, and having already formed an acquaintance with the language spoken by the Swahili-Arabs on the east coast of Africa, they did not stop to consider whether the persons they talked with were real natives or simply immigrants, but at once, supposing them to be *bonâ fide* natives, concluded that the native language in that part of Madagascar was similar to that used on the opposite African coast. It would not be possible for the Portuguese to have been talking with pure Sakalavas and conclude that they were using a language similar to an African one, for the Sakalavas never learn a foreign tongue. Even at the present time one may travel the whole length of the west coast, and not be able to meet with a real native who can speak or understand Arabic, or Swahili, or any other East African tongue. It may generally be said that the Malagasy natives never learn the language of the foreign element, but the foreigners have to learn that of the natives.

Dr. Vanderkemp, 1812.—In this manner, with one or two notable exceptions, the view generally held, till the beginning of the present century, was that Malagasy was a language of

African or Arabic origin. In 1812, Dr. Vanderkemp writes, "The Madagascar tongue, it appears, is a corruption of the Arabic," and still later on writers have appeared who have held a similar view. This general opinion regarding the origin of the language is easily accounted for, first from the general appearance of things, and secondly, from the inability (through want of proper material) of those who wrote and spoke on the subject, to investigate the question thoroughly.

African and Arabic influence twofold.—The Arabic and African influence in Madagascar, and on its language must be regarded in two distinct parts. There was that which had to do with the north-west, and afterwards the greater part of the west coast, which might be called the Swahili-Arab element; and there was also that which operated on the south-east coast of Madagascar, probably a pure Arabic element. These were quite distinct immigrations and had quite distinct influences.

Very few if any pure Arabs in Western Madagascar. Swahili-Arab=people of mixed African and Arab origin in East Africa and the Comoro Islands.—Probably the earliest Arab visitors in Madagascar first touched somewhere on the north-west coast. They simply came, traded and went off again. They did not settle then, and probably for many centuries, it may be, the Arabic and African influence in this part of the country was simply that of traders. It is quite possible, that it is only within the last two or three centuries that people of an Arab or African origin have settled in the western parts of Madagascar. Of pure Arabs, it is highly probable, that only a very few, if any, ever settled in this part of the island. Those who came were either members of the mixed race called Swahili, or men from the Comoro islands, who, though they were proud of their Arab origin, and are so to the present day, are yet just as much a mixed race, as the Swahilis themselves. At the present day I think it would be almost impossible to find a pure Arab on the whole west coast of Madagascar, though probably the African bred Arab or Swahili, and those from the Comoro islands may be numbered in some thousands. Many of these understand Arabic somewhat, but Arabic is not their language. They all speak a kind of Swahili, a language as mixed in its origin as the speakers are in theirs. This language is spoken all along the east coast of Africa from the equator to Lindi in latitude 10° S., in all the islands along the coast, and in all the islands of the Comoro group. Each district has its own dialect; that of Lamu differs from that of Mombasa, the dialect spoken in Zanzibar is different again, and so on all along the coast line. The coast islands and the Comoros each have their dialects, and each island differs somewhat from its neighbour.

Makua slaves.—There is also a large body of pure Africans in the western part of the island—but they are probably of a very recent importation. These are Makuas chiefly, and have been brought into the country by the Swahili-Arab element, as slaves. Their presence has had little or no effect on the language. They being slaves, their masters, the Sakalavas, would be far too proud to adopt any of the Makua words into their vocabulary.

African and Arab words of a kind such as would be expected.—In examining the Malagasy language as spoken on the west coast, we find just what would naturally be expected, viz., a considerable number of words of African and Arab origin, but all in a Swahili form or dress, and they are also the kind of words which one would expect to find introduced by traders and non-settlers. The purely African words in use in Malagasy are very few indeed, and there are none, I believe, that we may not reasonably consider to have come into Malagasy use, through a Swahili-Arab channel. I see no reason why such words as “omby” = cattle; Swa. “ng’ombe,” and “Amboa” = dog; Swa. = “Mbwa,” should not have been introduced by the Swahili-Arab trader. Who introduced the cattle if not these people? They must have come from Africa, and what more likely than that they were brought by the early traders, that the natives had no word for such an animal, and therefore adopted the name as well as the animal. So also it may have been with the dog.

African and Arab words fall naturally within three classes.—The foreign words in use in the Malagasy spoken on the west coast, can all be arranged in the three following classes—

First Class,—a very few words.—Pure African words for which the Malagasy have no equivalents, as—

<i>Kanga</i> Mal. <i>akanga</i>	= guinea-fowl.	<i>Mbwa</i> Mal. <i>amboa</i>	= dog.
<i>Ng’ombe</i> „ <i>omby</i>	= cattle.	<i>Mananazi</i> „ <i>mananasa</i>	= pineapple.
<i>Ntango</i> „ <i>voa-ntango</i>	= a gourd.	<i>Kuku</i> „ <i>akoho</i>	= fowl.

The purely African words for which the Malagasy have no equivalent are very few in number—and all are such as might reasonably have been introduced by traders.

Second Class—African and foreign words used in Madagascar by the Swahili-Arab traders only—for which there are Malagasy equivalents in use, as—

Foreign.	Malagasy.	English.	Foreign.	Malagasy.	English.
<i>Papango</i> ..	<i>tsimalaoky</i>	kite.	<i>Mamba</i> ..	<i>voay</i> ..	crocodile.
<i>Gora</i> ..	<i>pako</i> ..	an uncut piece of cloth.	<i>Zamani</i> ..	<i>taloa</i> ..	ancient.
<i>Dawa</i> ..	<i>fanafody</i> ..	medicine.	<i>Mohogo</i> ..	<i>balahazo</i> ..	cassava.
<i>Moto</i> ..	<i>afo</i> ..	fire.	<i>Seramalla</i>	<i>mpandrafi- tra</i> .	carpenter.
<i>Karami</i> ..	<i>mpancrota</i> ..	a writer.	<i>Rafiki</i> ..	<i>sakaiza</i> ..	friend.

There are several other words which might be collected belonging to this class.

Third Class.—African and other words connected with trade and likely to be in common use with traders, for which the Malagasy have no equivalents, as—

Foreign.	Malagasy.	English.	Foreign.	Malagasy.	English.
<i>Kanzu</i> ..	<i>akanjo</i> ..	the long Swa- hili dress.	<i>Pingu</i> ..	<i>ampaingo</i> ..	fetters.
<i>Tende</i> ..	<i>antrendry</i> ..	dates.	<i>Karafū</i> ..	<i>karafoy</i> ..	cloves.
<i>Nahotha</i> ..	<i>nahotha</i> ..	captain.	<i>Ng'ombe</i> ..	<i>omby</i> ..	cattle.
<i>Sahani</i> ..	<i>sahanj</i> ..	plate.	<i>Sahari</i> ..	<i>sahary</i> ..	a kind of cloth.
<i>Sukari</i> ..	<i>sokary</i> ..	sugar.	<i>Kaniki</i> ..	<i>kaniky</i> ..	a kind of blue cloth.
<i>Bakuli</i> ..	<i>bakoly</i> ..	basin.	<i>Karatasi</i>	<i>taratasy</i> ..	paper.
<i>Hariri</i> ..	<i>hariry</i> ..	silk.	<i>Mizani</i> ..	<i>mizanj</i> ..	scales.
<i>Robo</i> ..	<i>kirobo</i> ..	a fourth part	<i>Nussu</i> ..	<i>loso</i> (?) ..	half.

It is highly probable that all the African words in use in Western Madagascar can be embraced in one or other of the above three classes, and if so, they cannot be produced as showing evidence of a primary African element in the Malagasy language, or that the Madagascar aborigines came of an African stock; they much rather tend to prove that the African element was introduced at a much later date. If a collection and study of all the African words in use in Madagascar should show that they have come through a Swahili-Arab channel (and I believe this would be the result of such a study) it would be a proof that some other language than an African one was primarily used in Madagascar, and that the Malagasy language is only indebted to Africa for a few loan words.

Kind of words necessary.—Further, the kind of words used is another indication of the comparative age of the African

element in Malagasy. If we had found African words in the language, expressing numbers, parts of the body, natural elements, common things and everyday actions, there would have been some reason to think that the present Malagasy language was founded on some old African form, but we do not find anything of the kind; all words in use describing such ideas, can be traced to quite a different source.

Construction of languages compared.—Again, the construction of a language should tend to show something of its origin. The construction of all the Eastern Bantu languages in East Africa may be said to be the same, but take any one of these and compare it with Malagasy, and it will be found that they have but little or nothing in common. I think it may be safely said that the African element in Malagasy does not in any way prove or even point to the theory that Madagascar was first peopled by an African race, speaking an African language. The sum total of the influence of the African and Arab languages on the western parts of Madagascar, has been to introduce a number of words, of which some few have been adapted and incorporated into Malagasy, as loan words, the others still remain in the lender's hands.

Theory that Malagasy is a corrupted form of Arabic. What induced that idea; European contact with Swahili-Arabs instead of with real natives. Mujangà.—As I have previously remarked the theory that Malagasy was a corrupted form of Arabic was held from the time of Marco Polo, till far into the present century. There was much that tended to induce that idea, especially when Madagascar and its language was but little known. Most of the Europeans who visited the west coast came more in contact with the Swahili-Arabs located there, than with the real natives, and as these would use a language freely sprinkled with Arabic words, those Europeans would naturally conclude that the language they had heard was a kind of Arabic. The same mistake might happen to-day. Suppose a man without any previous knowledge of Madagascar or its language were to go ashore at Mujangà, one of the largest towns on the west coast, and there collect a vocabulary of the language from a number of the people, and then submit his collections to a scholar acquainted with Arabic, that scholar would undoubtedly conclude that the language was either a corrupted form of Arabic or allied to it. And why? Because the collector of the words obtained them from the Swahili-Arabs, who occupy the greater part of many of the principal towns on the west coast, such as Mujangà, Ancrontsanga and other places, and who, though they understand Malagasy, prefer to speak in their own

language. The Sakalavas, the true Malagasy of the west coast, shun the large towns, where the Hovas have a station, and prefer to live in the smaller villages inland, or in isolated places along the coast.

Arabic words amongst Sakalavas.—In addition to the above, the few Arabic words which are in use amongst the Sakalavas and others on the west coast, words denoting the days of the week, and the months, as well as trader's words, would at first sight induce most people to think that Malagasy was somewhat allied to Arabic.

Arabs in South East Madagascar.—Having shown thus far the improbability of there having been an African element in the original language spoken in Madagascar, and traced to some extent the influence of the Arabic language introduced on the west coast, we must now go further and take up the subject in an opposite part of the island—the south-east districts.

Arab influence of another kind.—The Arabic influence on the south-east coast was of a somewhat different nature to that exercised on the west coast. The circumstances of the Arabs were different. Those who came to the west coast, came only as trading visitors, and their presence chiefly affected the language in matters regarding trade. Not so on the south-east; the Arabs who came there had brought their all with them, and they had come to stop. They probably came in considerable numbers, for nearly all the south-east tribes claim their descent from them; and that they gained an ascendancy over the natives either by force or superior skill, there can be no doubt, for in the course of time their permanent residence in the island affected the whole social system of the Malagasy.

Number of Arabic words and ability to read and write in Arabic.—In this part of Madagascar we see much that would lead people to think that a relationship existed between the Arabic and Malagasy languages. This might at first sight seem to be indicated by the considerable number of words which have been introduced by the Arabs who came and settled in this part of Madagascar; also by the fact that many of the natives from ages past down to the present time, have been able to write and read a kind of Arabic, and also to decipher a number of old Arabic manuscripts they have in their possession, and which they guard with the most jealous care.

Nature of Arabic words. First Arabs come to South East Coast not later than 700 or 750 A.D. (probably); Astrology and Divination.—Upon investigation, we find here, as we did on the west coast, that the words which have been introduced

were just such as might have been expected from the Arabs of their time and under their circumstances. It is well known that shortly after the time of Muhamed, all Arabia was distressed by fierce and continued oppression, and many were compelled to leave their country and seek new homes in distant lands. What is more likely than that these Arabs who came to South East Madagascar should be some of those who had given up their fatherland rather than adopt the new religion of Muhamed? Their system of astrology and divination was their religion, and this they brought with them. In the course of time this astrology and divination was introduced amongst the natives and accepted by them, and the Arabic words necessary for expressing the various ideas of the system were incorporated into the Malagasy language.

Kind of Arabic words.—Thus we find that the majority of the words which have been introduced by the Arabs on the south-east coast are those connected with chronology, astrology, divination and kindred subjects, together with some others which refer to music, writing and books, and perhaps a few common words.

Chronological terms.—In chronology, Arabic gives us the names of the days of the week, which are the same throughout the island, also the names of the days of the month, and the names of the months. These names of the month do not follow the Arabic month names, but, according to Professor Fleicher, the Arabic names of the constellations in the Zodiac—the day names of the month being taken from the Arabic names of the principal stars in the above constellations.

Astrological.—In astrology and divination we have Arabic words used to express nearly all the terms employed in the mysteries of Sikily, Vintana and San-andro.

Musical.—In music, there are several names of musical instruments evidently derived from Arabic.

Paper, books, &c.—Arabic words are used to express such things as books, paper, sealing-wax, pictures, and similar things.

These are just the kind of words one would expect to find introduced into Malagasy by Arabs who came as settlers, and obtained a permanent, but not an absolutely dominant position.

Nothing to show that Malagasy is derived from an African or Arabic source.—To sum up the above evidence, we may safely conclude that the Malagasy language was not originally derived from either an African or Arabian stock, and secondly, that the presence of Swahili-Arabs, on the north-west coast, and Arabs on the south-east, has affected the language only to

the extent of introducing a number of loan words, and these are just such words as one would expect to find incorporated in the language, when we consider the circumstances of the persons who introduced them.

The Eastern Archipelago the true source of the Malagasy people and language. Various writers.—We must now turn our attention to that part of the world, which is undoubtedly the source of the Malagasy language and people. Although most writers, previous to the present century, held that the Malagasy language owed its origin to an African or Arab source, and some even in late years have persisted in the same view yet from an early date, there were a few who held a different opinion on the subject. Nearly three hundred years ago both Houtman and Gothardus Arthusius showed that there was a relationship between Malagasy and the Malayan languages. Later on Reland and Captain Cook noticed the same similarity existing between Malagasy and Malayan words. Still later, Marsden, Baron W. von Humbolt and Freeman showed that Malagasy could claim a relationship, in both words and construction, not only with Malayan, but also with most of the languages spoken in the Melanesian, Micronesian and Polynesian group of islands in the far East; and now during quite recent years, the investigations and writings of Dahle, Cousins, Richardson and others have confirmed this view, and to them I am indebted for much of the information embodied in the following remarks on this part of my subject.

Improbable from a geographical point of view.—Looking at the question from a geographical point of view, this conclusion is quite the reverse of what might have been reasonably expected when we consider how comparatively near Madagascar is to Africa, and the vast distance intervening between that island and the Malayan Archipelago.

Value of words as evidence.—One of the first branches of evidence, though perhaps of a doubtful value, is the number of words which are common to the languages under discussion. But as I have said regarding the African and Arabic words found in Malagasy; it is the kind of word rather than the number, that is of value in an inquiry of this nature. In this case, however, the words held in common are eminently suited to establish the theory that Malagasy is a branch of the great Malayo-Polynesian family of languages.

Let us first consider the words employed to express the numerals from one to ten.

Nature of evidence.—In a list of 33 languages taken from Mr. A. R. Wallace's book, "The Malay Archipelago," we find that

1. Numerals.—

Languages.				Malagasy.			
For one	..	22	have some form of	..	<i>sa</i>	..	<i>isa</i> or <i>raiki</i> . ¹
„ two	..	30	„ „ „	..	<i>rua</i>	..	<i>roa</i> „ <i>rua</i> .
„ three	..	27	„ „ „	..	<i>tol</i>	..	<i>telo</i> „ <i>telu</i> .
„ four	..	33	„ „ „	..	<i>pat</i>	..	<i>efatra</i> „ <i>efatsi</i> .
„ five	..	32	„ „ „	..	<i>lima</i>	..	<i>dimy</i> „ <i>dimi</i> .
„ six	..	30	„ „ „	..	<i>an</i>	..	<i>enina</i> „ <i>enina</i> .
„ seven	..	27	„ „ „	..	<i>pitu</i>	..	<i>fito</i> „ <i>fitu</i> .
„ eight	..	24	„ „ „	..	<i>walu</i>	..	<i>valo</i> „ <i>valu</i> .
„ nine	..	29	„ „ „	..	<i>sio</i>	..	<i>sivy</i> „ <i>sivi</i> .
„ ten	..	12	„ „ „	..	<i>pulu</i>	..	<i>folo</i> „ <i>fulu</i> .

¹ I quite agree with Dr. Codrington, in objecting to the use of the letter *y* as a final form for *i*, and seeing that there are both *o* and *u* sounds in Malagasy, it is to be regretted that the one vowel *o* has been made to do duty for both.

2. *Use of common words.*—The above comparison of numeral forms might be considered sufficient evidence to prove a kind of relationship between Malagasy and the languages spoken in the Malayan Archipelago, and Cousins produces a list of words which in themselves, considering their kind, ought to be sufficient to remove all doubt. He says,¹ “We find also, such words as people, body, head, back, hands, thigh, breast, eyes, nose, ears, forehead, lips, hair, teeth, heart, kidneys, liver, bone, muscle, blood and veins. Then we meet with mother and child, male and female. We also find words for the day and night, for year, for the sun, moon and stars, for the gentler breezes and for strong wind, for stone, earth and sand, for fire and water, for sea, waves and probably river, for clouds and rain, for promontory or headland, and perhaps for hill. In the animal kingdom we find names for bird, for crow, for cat, crocodile, and chameleon, for worm, leech and cray-fish, for fly, locust, mosquito, and spider. We also find a word for horn. In the vegetable kingdom we find names for tree, forest and seed, for the midrib of the banana leaf, for the banana itself, for the mango and fig, for the cocoanut, the bamboo, the yam, the mushroom, and possibly the chili. We find also names for lead, and charcoal, and possibly for iron. Words also exist for weaving, smoothing, sharpening and digging, for gazing, weeping, hanging and killing, for scratching, scraping, squeezing, sucking, coughing, sleeping, choosing, opening, growing, and also for bathing and swimming. We find also such words as house, wall (of a house), to dwell, bed, trivet, pot, knife, spit, staff, road, bridge, canoe and sail,

¹ Extract from paper in “Ant. Ann.” iv, pp. 416, 417.

also for food, meat, fish, egg, salt, fat, rum, and possibly rice. Then we meet with the simple adjectives, soft, warm, sweet, bitter, blunt, cheap, raw, ripe, thin, dead, alive, red, black, white, yellow, and perhaps blue. All these have been identified with a fair amount of probability; and from the simple notions, they, for the most part, express, we may, I think, conclude that they belonged to the original language of the Malagasy people, and that, therefore, their language was a member of the Malayan family."

But still further and perhaps more conclusive proof is found by a comparison of the construction and use of the words in the Malagasy language with those spoken in the Eastern Archipelagos.

3. *The connecting letter -n-(-m).*—In compound words the letter *n*- (sometimes changed into *m*-) is used in Malagasy as a euphonic connecting link, as in *vava-m-boro*=a bird's beak, and *voa-n-kazo*=fruit (of a tree) or *volombava* for *volo-n-vava*, or *vola-ni-vava*=hair of the mouth. In the Nias language, the same form is used as *bu-m-barwa*, with the same meaning.

4. *The infixes.*—The infixes in Malagasy are, *in*, *on*, *om*, *ol*, *ar*, *er*, and probably others. This form and use of a particle is not found in any of the Polynesian or Melanesian languages, but only in the Malayan group. Infixes similar to the Malagasy ones are found in all the Malayan languages, but most frequently met with in the Tagala family, where the forms in use are *um*, *in*, and *im*, and have probably a more extended meaning than the infix forms in Malagasy.

5. *The Definite Article.*—The Malagasy definite article is *ny*. In the languages spoken on twenty-seven of the Melanesian islands, the letter *n* appears in the definite article.

6. *The Personal Article.*—The Malagasy personal article is *i*. This is found in the languages spoken on ten of the Melanesian islands, and is used in the same manner as with the Malagasy. Probably the Javanese *si*, is only another form of the same word, the Malagasy having dropped the initial *s*, according to their custom in dealing with words of Javanese and Malayan origin.

7. *The Genitive Case.*—The principal modes of expressing the genitive case in Malagasy are, by adding an *n*, or (*n'*), to the preceding noun, and by simple juxtaposition. In the Malayan languages the genitive case is often expressed by juxtaposition of the two nouns, very frequently also it is denoted by the use of the word *na*, or some form of it inserted between the two nouns. In Polynesian languages the words, *na*, *no*, are used in the same manner, the *n* of these words are frequently dropped, and then only *a* or *o* is used. In the Melanesian languages, the

genitive is also formed by juxtaposition, and very frequently by the use of *ono*, *no*, or *ni*, which by the dropping of *n*, becomes *i*, *e* or *o*. *Ni* governs the genitive case in ten Melanesian languages, *na* occurs in 3, *ne* in 1, and the shortened forms *r*, *e*, *o*, in four others.

8. *Similar prefixes*.—A use of similar prefixes is shown to exist between Malagasy and several of the Malayo-Polynesian languages; thus, in Batak, *ha-darat*=to go ashore (said of a person bathing), and in Malagasy, *ha-tratra*=up to the breasts.

9. *Personal pronouns*. *First person singular and plural*. *Third person singular*.—The Malagasy first person singular *aho*=I, is the same as *aku* in Malay and probably the Polynesian *au*. In Malagasy there are two forms to express the first person plural; one includes the person or persons addressed, the other excludes, as, *isika*=we (and you); *izahai*=we (but not you). In all the Melanesian languages, there are two forms of the first person plural, which are used in exactly the same manner as in Malagasy. Some of the other pronouns show a probable relationship between Malagasy and Javanese, as *izy*=he, she, it, with Javanese *iā*, in fact, *iā* itself is used by the Vezo Sakalava to express the same pronoun. The Malagasy *izay*=who, may have been formed on the Fijian relative pronoun, *ai*, and the word *ano*=a certain one, used in Western Madagascar also appears again in the Javanese *ano*.

10. *Suffix pronouns*. *First person singular*. *Third person singular*.—Of the suffix pronouns the similarity between the forms used in the Melanesian languages and in Malagasy is very great. The Malagasy form is *-ko*, for the first person singular. In twenty-four or more of the Melanesian languages, some form of *-ko* is used to express the same word, as *-ku*, *-gu*, *-k*, *-qu*, *-g*, *-ke*, *-go*. The Hawaiian *-u* and the Tongan and Fijian *-ku* are the same as the Malagasy suffixes *-o* and *-ko*=of me. In the third person singular the Malagasy form is *-ny*. The letter *n*, is found in the same pronoun in thirty of the Melanesian tongues.

11. *Demonstratives*.—Of demonstrative pronouns, two in Malagasy take the same forms as Malayan demonstratives, but having the meaning reversed, as in Malagasy: *ito*=this, in Malay means, that, *ini* in Malagasy=that, and in Malay=this.

12. *Adjectives*, *Melanesian suffixes, prefixes*.—Malagasy adjectives are formed in the same manner as adjectives in the Melanesian languages, some by the use of suffixes, others with prefixes. In the Melanesian tongues many nouns are formed into adjectives by taking the suffixes *-a*, *-ga*, *-ha*, *-ra*, *-ina*. In Malagasy nouns are changed into adjectives by suffixing, *-ina*, *-anu*, *-ena*, as *fasika*=sand, makes *fasch-ina*=sandy; *bika*=shape, makes

bik-ana = well shaped, and *fery* = wounds, make *fer-ena* = having wounds. Malagasy adjectives are often formed by prefixing *ma-* to a root form, as *ma-dio* = clean, from root *dio*; *maloto* = dirty from *loto*, *m-erika*, showery, from *euka*. In the same manner adjectives are formed with the prefix *ma-* in sixteen of the Melanesian languages, and in all these the prefix *ma-* indicates condition as in Malagasy.

13. *Verbs. Common use of verbal particles. Prefixes without any separate meaning.*—The use of verbal prefixes in all the Polynesian and Melanesian as well as in some of the Meronesian languages implies a kind of affinity between them and the Malagasy tongue which employs verbal prefixes in the same manner, though they are not in the same form. There is also another point of resemblance in these prefixes, taken separately they have no meaning in themselves, in any of the above languages, but when employed as prefixes, they invest the words to which they are attached with the properties of a verb.

14. *Reciprocal prefixes.*—The reciprocal prefixes *vei* and *var* with their varying forms, *vua*, *hei*, *hai*, *fai*, *we* and *e*, are found in twenty-one Melanesian languages. In Malagasy also reciprocation is expressed in the same manner by the use of the form *-if-*.

15. *Conditional prefixes, ma-*—Conditional prefixes are used in nearly all the Melanesian languages, *ma-*, *me-*, and *m* are met with in twenty languages, and in others *ta*, *t'*, and *da-*, are found: *ma-* is also used as a conditional prefix in Malagasy.

Tafa.—The prefixes, *tara*, *tav*, *ava*, *tapu*, &c., are employed in thirteen languages to denote spontaneity. The Malagasy equivalent of these is *tafa*. Dr. Codrington says,¹ "An example from Mota will explain its use; to untie a rope is to *ul* it, but a rope that has not been untied by anybody, but has come untied of itself = *me tavaul*. The same is the case when the prefix is not plied to a verb; *raka* in Mota is "up"; *tavaraka* is to get up, not to be raised, to get up of oneself. The resemblance between the Malagasy *tafa*, and the Banks islands *tava*, is so complete in form and signification, and this in a fine point of meaning, that, considering the space of ocean that separates the languages, it is a matter of astonishment that it should exist. It is impossible that it should be accidental, it could not be introduced by Malays or Polynesians who have it not; it must have survived no one can tell, what vicissitudes and changes, in a course of years no one can number, and presents itself, like a rare species of plant or flower in isolated and widely separated localities, a living and certain proof of common origin and kindred.

¹ "Ant. Ann.," iii, p. 351.

16. *Prepositions ny=of*.—The preposition *ni* = of, in Malay and Batak is the same as the preposition *ny-* in Malagasy.

Prepositions i and a.—The Malagasy preposition *i* = at or in, as *i-voho* = at the back, is probably the same as the Dairi and Hawaiian *i*, Malay and Batak *di*, and Mangkasar and Bugis *u*: and both *i* and *a*, as in *i-maso* = in the eyes of, and *a-morona* = on the brink of—closely resemble the forms used in twenty-four of the Melanesian languages. "The simple locatives *a*, *i*, and *e*, appear throughout the whole Melanesian area."

Prepositions amy, an.—The preposition *amy*, is represented in the Polynesian and Melanesian languages under a variety of forms, as *mi*, *me*, *ma*, *mo*, *imi*. These all agree in meaning with the Malagasy form, *amy*. The Malagasy preposition *an*, is recognised in the Melanesian *ana*, or *an*, which has the same meaning.

17. *Reduplication*.—The reduplication of a root in the Malagasy language generally indicates a repetition or plurality of the idea contained in the root, in other cases it points to doubt or diminution, or implies reservation. It is also used in forming comparatives.

Malayan.—Reduplication of both verbs and nouns is found to be of more or less frequent occurrence in all the Malayan group of languages. It is generally employed in a frequentative sense, but it is also used to form collectives, in which it also points to plurality and repetition, as the leading idea. Besides the above, reduplication is also used in Malayan tongues to form diminutives.

Polynesian.—In the Polynesian languages reduplication is used to form frequentatives and collectives, and to express plurality. It is also employed as in Malagasy in forming comparatives.

Melanesian.—The use of reduplication occurs in many of the Melanesian languages; it is generally used as a frequentative, but sometimes in a different sense, as in Fiji, it is used as a diminutive or for derivation. In Eromanga, Tanna, Malikolo, and Bauro, it is employed as a means of derivation.

Summary.—In the above we have a considerable amount of evidence (and much more might be collected) all pointing to one conclusion, viz., that Malagasy is a member of the same group of languages as those spoken by the Malays, and in the islands of the Polynesian, Melanesian, and Micronesian Archipelagos.

In brief this evidence consists of—1, similar forms for numerals; 2, the use of the same words to express every-day actions and the ordinary things of daily life; 3, the joining together of words by the use of the letter *n*; 4, by the same

use of infixes; 5, the same definite article; 6, the same personal article; 7, the same manner of expressing the genitive case; 8, similar prefixes; 9, similar personal pronouns; 10, similar suffix pronouns; 11, and demonstratives; 12, the same manner of forming adjectives; 13, a similar use of verbal prefixes; 14, and reciprocal prefixes; 15, also conditional prefixes; 16, the use of the preposition *ny*=of; 17, and a similar use of reduplication of roots.

Other points worthy of investigation.—There are many other points connected with this subject well worthy of investigation as—1. The question of the non-introduction of Muhamedanism into Madagascar by the Arabs, though they instructed the natives in their system of astrology and divination. This seems to imply that the first immigration of Arabs on the south-east coast took place either before the time of Muhamed or very shortly after, in fact before Arabia and the surrounding countries had accepted that religion. 2. The improbability of Africans having first inhabited Madagascar, from the fact that the pure African races of Eastern Africa are not sea-faring people, nor have they any sea-going craft. Whatever there is of a sea-going element on the east coast of Africa, it has been introduced by Arabs and other outside nations. 3. The comparison of Malagasy with the Malayan and other languages, seems to imply that the primary immigrations to Madagascar from the East must have been at a very early date, and probably before the Eastern race or races had spread themselves over the extensive and numerous islands of the Eastern Archipelagos, and also before the Arabs were acquainted with East Africa, if we are to consider the commencement of the Christian era as the date of their first acquaintance with the East African coast. There are many other kindred points on this subject which are well worthy of investigation, and would probably tend to throw much light on the hidden history of a most interesting people and country.

Salutations.—The salutations in use amongst the various Malagasy tribes differ somewhat, in form and idea, but not so much perhaps, as might be expected, when we consider the varying circumstances of each tribe. The forms in use amongst the Hovas are more full, and more expressive of politeness than those of the other tribes. This was to be expected, seeing that the Hovas, in their use of words and in their manners they are the most polite of all the Malagasy people. The common Hova form of salutation is—

Hova. Manao ahoana hianao ?—How are you ?

Resp. Tsara hiany aho-fa misotra anao.—I am very well, I thank you.

A salutation to a Hova person of importance is as follows :—

Tsaràve, tompoko. E. !

Veloma, soàva tsarà.—Good-bye, may you be good and excellent.

Sakalava, North. Akory anareo ?—How are you ? } used amongst
Resp. Maiva, akery anareo ?—Well, how are you ? } men.

" " Akory anao, sakaiza ?—How are you, friend ? } used
Resp. Tsara-bè, akory anao ?—Very well, how are you ? } with
women.

" *South.* Salama aminao, akory anao ?—Peace with you, how are you ?

Resp. Bosoa, akory anao ?—Very well, how are you ?

Mahafaly. Salama.—Peace.

Resp. Salama.—Peace.

Antanosy. Akory anareo atu ?—How are you there ? } at meeting.

Resp. Ahy, Izahay atu.—Yes, we are here.

" Eë aminareo eë !—We leave you well and safe, eh ? } at part-
ing.

Resp. Ekā.—Yes, oh yes.

" Salamanareo eë !—We leave you in peace and safety, eh ?

Resp. Ekā.—Yes, oh yes.

Betsileo. Filahitra anareo.—May you be happy.

Resp. Filahitra.—(And you also) happy.

Betsimisaraka. Finahitra anareo.—May you be happy. { used by men to
women, and
women to men.

Resp. Finahitra.—(And you also) happy.

Finahitra anao.—May you be happy. { Used by men to
women.

Finahitra ny kisany.— { Used by women
to women.

By a study and comparison of the forms of salutation in use in a country, it is evident that much may be learnt of the history, past and present, of the people.

The ease, grace, politeness, and respect shown in the salutations in use amongst the Hova tribe, points to a people enjoying a state of safety, ease and prosperity, also to a well established form of society having its respective grades. Amongst the Sakalavas North, we may imagine a state of simple independence and equality and mutual regard. Amongst the Southern Sakalavas, the elements of fear and doubt come in, Salama aminao—Is all well with you ? Is it peace ? Do you come in peace to me ? Are you at peace with others ? or, Have no doubt regarding myself, for I am at peace with you. All this points to a country in which intrigue and cunning is at work, an unsettled state of society. The Mahafali salutation is as abrupt as the people who use it. There is no beating about the bush with them. Is it peace or war ? Do you come as a friend or an enemy ? In the Antinosy salutation we may trace the signs of mutual interest mixed with a fear of dangers from outside. Are you still all right—no evil has happened to you ? or on leaving, You feel we are leaving you in a state of safety ? Such terms and ideas might well be exchanged by a people, whose country is surrounded by tribes ever ready to attack whenever

they see a favourable opportunity, and being amongst themselves broken up into a number of petty sub-tribes, each of which is ever on the alert to attack, kill, steal cattle, and carry off people as slaves. The form of salutation used by the Betsimisarakas and Betsileo points to a people who had been accustomed to dwell in a country blessed with comparative peace, and exemption from continuous raiding and fighting—a quiet, agricultural people rather than great cattle-keepers. The use of the second person singular in nearly all the provincial salutations point to the meagre measure of respect and regard accorded to the female sex. This is shown especially amongst the Sakalavas and southern tribes. Whilst the esteem and probably also fear, with which men are regarded by women is shown by their almost invariable use of the second person plural when they address any of the male sex.

It is quite likely, that at the present time, all these various salutations are simply used as a kind of formula, without any regard or interest in their real meaning whatever, rather as a kind of introduction to further conversation than anything else, but this does not detract from the value of the formulæ, nor is it a reason why they should not be regarded as a kind of depository of the history of past times, if not the present. Most of the past history of uncivilised tribes is lost through want of written records; but yet how much still exists, hidden somewhat, in the old words, forms and phrases still in use! How much would a careful study and examination of salutations, proverbs, conundrums, tales, legends, and traditions reveal of a nation's past history, the people's thoughts and habits of life, their condition, pleasures and troubles!

Conundrums, &c.—In every country a store of riddles, tales, legends, and such like lore, is to be met with, and Madagascar is not without its share. Often have I sat by the village or camp fire, as the case might be, whilst the men, and women also, if any present, squatted around enjoying the early hours of the evening, telling tales (fables) and putting conundrums. Several of these riddles and also some proverbs I collected whilst in the Antiniosy and Sakalava country, of which I here append a few. The person proposing the riddle says "Takasiry," to which the people answer Eë. The following are from the Antiniosy people:—

1. Raha raiky miharo aminy angàrin' ny olo? = Something mixed up with the name of the person. Answer: Vaha = a basket, or makinty = a kind of sweet potato, because Ivaha and Makinty are used as women's names.

2. Raandria omba andrano, olo menty omba tambo = The king goes by water—the black man goes on foot, or by land. The answer is Vary = rice,

and Varondra=sweet potatoes, because rice is generally conveyed by canoe, and sweet potatoes in baskets overland.

3. Zanari Raandria tsipatora andoha = The child of the king is not slapped on the head. The answer is Reketa—which is the Malagasy name for a species of *Opuntia*, a prickly pear. This is so full of thorns that no one would think of striking it with the hand.

4. Zanaka Raandria miampata ang'abo = The child of the king looks down from above. The answer is Akondro = bananas, because of the great head of bananas hanging down from the fruit-stalk, and seeming to look down on the ground.

5. Teano-bi, tsitafoa = a big house, not roofed in. Answer: Zoliky or Valonemby=the cattle yard, which is a large enclosure without any roof.

6. Raha hany, raha tsy hany = a thing to be eaten (and) a thing not to be eaten. Answer: Sariky = a calf, and Fariky = a bee. A calf can be eaten, but not the bee. This is simply a play on the two words Sariky and Fariky, but it is not perfectly correct, for some large species of wild bees (or wasps), when in the larval state in the comb, are roasted and eaten.

7. Angiro Zanahary misy zano antroky = God's stick has water in its stomach. Answer: Fary = sugar-cane, because of the water or juice there is in it.

8. Raha kely' kely mahay mitrambiky = a rather small thing that knows how to leap. Answer: Dinta = a leech, because of the leech seeming to leap from the ground or from the grass and fastening itself to the bare legs of the passers-by.

9. Dimylahy-misatroky bory = Five men (each) with a round hat, Answer: Tundu = The fingers: the finger-nails are the round hats.

10. Ny maty no mitanza ny velo? = The dead which carries the living. Answer: Kibany = a bedstead. Because a framework like the top of a bedstead is used for conveying the dead on to the grave.

11. Maro ampinga, maro lefo, fa tsimahaleo miamby vady aman zanany. Answer: Tsuha = a lemon tree. Plenty of shields (and) plenty of spears, but (still) unable to guard his wife and children. The spears and shields refer to the thorns of the tree and the hard green rind of the fruit.

12. Mandevy, tsy lio = Buried but not rotting. Answer: Volo = hair; because it does not rot quickly in the ground.

13. Soa kily mahay mandary. Answer: Tantely = Honey.

14. Zanaka Raandria mikunga antana mishitsy angaitry. Answer: Tsako = Indian corn.

15. Voa-sary masaka no tsy teo fasy, soa ampela no tsitia vadiny mahazo nazy. Answer: Laorany = the fruit of the ampelo (orange).

16. Sandoko raiky latsaka anteng'a rano. The answer is Sambo = a ship.

17. Reny maty amboly aloky, zanany maty mang'orokolo. The answer is Vary = rice.

18. Tily ang'abo, tomboy tsimikwitsy. The answer is Varagashy = a door.

19. Ang'onby menty homa amcronky. Answer: Hao.

20. Raha ang'abo be volontratra. Answer: Fanza.

21. Bararata ifiririotsy—Mahafaly mangala deotsy.

22. Kirioky, kirioky, andakatsy.

Kamireoseo tsimangalatsy.

23. Tsimimisy antayley.

Raha talay tsimahay mitifitsy.

24. Tapa vy, tapa fiharatsy.

Tsy maty nino, maty alatsy.

25. Kiry fuly, mira fotany.
 Mihira mizaza, fa soa nytany.
 26. Voatavo domiky, vava ao kepoky.
 27. Be Fihiseng'a manday mikoty.
 Boka eo renylahy, mandeha mba foty.
 28. Tripiriry petaky, tsimang'iry hetsaky.
 29. Akata amcrondrano, tsihay ang'omby hany.

Many other examples might be added to the above. There are many also, though useful in throwing light on the mode of thought and customs of the people, are yet not suitable for publication.

Changes in words.—We will now turn our attention to some remarkable features in the Malagasy language, some of which are also common to the languages spoken in the Eastern Archipelagos.

Royal words.—It is interesting to notice the causes which lead to changes in the meanings of words and sometimes to their temporary or even total disuse. These changes are brought about in a variety of ways, but almost invariably in some connection with the king or head of the tribe. There are many words which are used in a certain sense to the king (or queen, if she is head of the tribe), and these words cannot be used in this special sense with the common people. Especially there are those which have reference to the state or health of the living king. In the following list separate words are given, denoting those used in connection with the sovereign, and those referring to the people, as when speaking of an ordinary person he is said to

Be <i>marary</i>	= sick,	but the king is <i>masanafana</i>	= warm.
„ <i>maty</i>	= dead,	„ „ <i>folaka</i>	= broken.
„ <i>folaka-manta</i>	= sudden death,	„ „ <i>folaka andantony</i>	= broken of the forearm
„ <i>misaona</i>	= wailing,	„ „ <i>miaty dranomaso</i>	= to offer tears
„ <i>alevina</i>	= buried,	„ „ <i>afenina</i>	= hidden.

There are several other similar words. Numbers of the royal family when dead are said to be “diso”=missing, not “maty”=dead, or “lasa”=gone, or as some say “latsaka”=fallen. Amongst all the western and southern tribes the greatest respect is paid to the king or whatever appertains to him. It is sufficient to say “andonaka,” to restrain any busy-body from even touching anything belonging to the king, or coming from the king's residence, the “lonaka.”

The word “biby.”—The word “biby” is used in a rather curious manner amongst the Sakalavas of the north-west and west coast of Madagascar. The word is most probably the Swahili “bibi,” meaning grandmother, lady or mistress (used by slaves), a name of honour. It is the custom amongst

some of the Sakalava queens to take for a husband a young man from the Swahili-Arab population. This young man receives the title of "biby," and is subject to certain rules similar to those which bind the wife of an influential Arab or Swahili. He is not supposed to go out of the house in the day-time, or to be seen by the people generally. When he goes out in the evening, or on a visit to another place, he is always accompanied by three or four female slaves, who keep about him in much the same manner as if they were waiting on a lady. Amongst other rules, he is bound to remain faithful to the queen; should he violate the marriage contract, the penalty is death. The queen of Katsepy, a Sakalava district opposite Majunga, is married in this manner, and has an Antalaotsy man for her "biby." I do not think this term is given to the queen's husband should he be a Sakalava, nor do I think the word is used in reference to any of the Sakalava chiefs and their wives, by the Sakalava, though the Swahili-Arab population would naturally apply the term to the wives of the Sakalava chiefs, or, in fact, to any woman whom they wished to please.

Words common to kings and chiefs only.—Besides special words which are the exclusive property of kings and queens, there are a number which are common to kings and chiefs, but cannot be used in the same manner by the other people, as in the following list of words used in the Antinosy country.

King's word.	People's word.	English.	King's word.	People's word.	English.
<i>Mikama</i> ..	<i>mihina</i>	to eat.	<i>Feensonga</i> ..	<i>oro</i> ..	nose.
<i>Fanzavitsy</i>	<i>tangà</i> ..	hand.	<i>Fang'avao</i> ..	<i>cava</i> ..	mouth.
<i>Fandia</i> ..	<i>tomboky</i>	leg.	<i>Fandraza</i> ..	<i>nify</i> ..	teeth.
<i>Kabesa</i> ..	<i>loha</i> ..	head.	<i>Fameliky</i> ..	<i>lela</i>	tongue.
<i>Fihena</i> ..	<i>maso</i> ..	eyes.	<i>Ferang'a</i> ..	<i>tratra</i> ..	chest.
<i>Fivavia</i> ..	<i>lamosy</i> ..	back.	<i>Samaky</i> ..	<i>teraky</i> ..	a woman who has horne children.
<i>Maroy</i> ..	<i>volo</i>	hair.			
<i>Tantaitzy</i> ..	<i>vaoky</i> ..	beard.	<i>Métambésatsy</i>	<i>mitubúka</i> ..	to leave.
<i>Mitandava</i>	<i>mandeha</i>	go.	<i>Sabaka</i> ..	<i>satroky</i> ..	cap or hat.
<i>Mirosoy</i> ..	<i>mandry</i>	sleep.	<i>Mang'ialo</i> ..	<i>ampondra</i> ..	plate or dish.
<i>Mahakama</i>	<i>hany</i> ..	food.	<i>Fioky</i> ..	<i>sotro</i> ..	spoon.
<i>Mang'oa</i> ..	<i>mang'a-laka</i> .	to filch for eating.	<i>Lonaky</i> ..	<i>trano</i> ..	house.
			<i>Anza</i> ..	<i>vintsy</i> ..	satisfied.
<i>Misonsoy</i> ..	<i>mizaka</i>	to talk.	<i>Miandrano</i> ..	<i>miang'aitzy</i>	evacuate.
<i>Mahena</i> ..	<i>mahita</i> ..	to see.	<i>Mianky</i> ..	<i>maty</i> ..	dead.
<i>Tsarembo</i> ..	<i>lamba</i> ..	clothes.	<i>Fiang'itsy</i> ..	<i>fisofo</i> ..	bladder.
<i>Menkahaky</i>	<i>homehy</i>	laugh.	<i>Diso</i> ..	<i>laza</i> ..	dead.

"*Fady*" words and substitutes.—Again the king has power to

make certain words "fady," viz., to prohibit their use, it may be for a time, or entirely, and then other words must be adopted to use in the place of the "fady" words. As, for instance, Tompomana, king of the South Sakalavas, had occasion to visit Manombo, one of his chief towns, on the west coast, in order to perform the ceremony of washing the "jiný" or relics of the departed kings. On this occasion he made a number of words "fady," amongst them were the following, which are given with their substitutes:—

<i>Tsikaiko</i>	now	<i>tsikasako</i> = I do not know.
<i>Famaky</i>	"	<i>tsyavia mang'oa and' onaky</i> = an axe.
<i>Renaiky</i>	"	<i>betiky</i> = a child.
<i>Lehilahy</i>	"	<i>dzaodzao</i> = a man.
<i>Mahay</i>	"	<i>mahakasa</i> = to know.
<i>Balahazo</i>	"	<i>madzèra</i> = cassava.
<i>Koso</i>	"	<i>fitsó</i> = a pig.
<i>Tcheky</i>	"	<i>besenta, tsibabaky</i> = a pumpkin.

Words containing part of the name of king or queen prohibited.—So again amongst the western and southern people of Madagascar, great changes are made in the use of words by the prohibition of the use of any word containing a part of the name of the king or queen. This custom has undoubtedly done much to produce the difference existing between neighbouring dialects, and its value in this connection may be estimated when we consider the number of petty kings there are, and that the name of each one produces a more or less permanent change in the language.

Change of name at death of kings, chiefs, and notable persons; change of name of living persons.—Again a considerable effect on the language is produced at the death of kings, chiefs and any person of importance or notable in any way—even if they are poor. The mention of the name of the king, which he bore whilst living, is tabooed to all the people of his kingdom. The name of a chief is tabooed to all in any way connected with him, and that of a notable person to all belonging to his or her family, and should there be another person in the family bearing the same name as that of the person deceased, that name must be laid aside and another one taken. This change of name is often made as a mark of respect for a friend, as in a case which happened at Nossy Vey, a woman named Nafiniko died, her friend, not of the same family, but bearing the same name, changed it for Ranza.

It is considered an honour to the dead to change their name. I was once travelling along the west coast in my "laka" when in the distance we heard some guns being fired off, denoting a death. Shortly afterwards, passing another "laka," my men made inquiries as to who was dead. It was the grown up daughter of

a certain person, but the people in the "laka" were careful not to mention her name. On asking the reason, I was informed that the name of the deceased person was to be changed, and they did not yet know what new name would be adopted for her. She was not a person of great family, but had won the esteem and regard of the principal people on account of her quiet demeanour and respectable manner of living, and on this account was to be honoured.

General use of the custom of changing words.—This custom of changing names and words seems to be common throughout Madagascar. It is everywhere in use along the west and southern districts of the island amongst the Sakalava, Mahafaly, Antandroi and Antanosy. The names given to the deceased kings and chiefs are invariably formed of three words, of which the first is always Andriana = lord, the second is some word denoting respect or honour, or pointing to some characteristic of the deceased; the third and last part of the name is always *arivo* = a thousand, as the name of Raimosa, a Sakalava king, was changed to Andria-mandion-arivo. Any mention of the name borne by a chief or king whilst living is strictly prohibited after the death of the said king or chief. The violation of this law is severely punished—and the offender may even have to pay the penalty with his life. Even amongst the common people it is considered highly indecorous to mention the name of a deceased person.

Writing and reading.—I must finish these notes by a few remarks on Malagasy writing, arithmetic and art.

The art of writing was first introduced into Madagascar by the Arabs, who at an early date came and settled on the south-east coast. It is highly probable that only the few, viz., those who had the keeping of the sacred writings, and who were expounders of the mysteries of sikily and vintana, were taught how to read and write. The fact of there being so few who understood how to read and write in the Arabic character, when the missionaries first came to Madagascar, implies that it could not have been commonly taught. At the present day there are still some few amongst the Antaimoro, Antanosy, and other south-east tribes who understand something of writing with Arabic letters. Those of the Antinosy who are acquainted with it, are either kings or great chiefs; none of the common people can either read or write. Besides the above, there are many amongst the Antalaotsi of the north-west coast and the Antalaotra of the south-east who are able, more or less, to read and write in the Arabic character. But these Antalaotsi of the north-west can scarcely be regarded as Malagasy, being the offspring of Swahili-Arab fathers with Malagasy women,

or else African slave women, and I think that the Antalaotra of the south-east have a somewhat similar though perhaps a rather more ancient origin. A knowledge and use of the Arabic characters is common to all the Swahili-Arabs throughout Madagascar—so one may reasonably expect their descendants to know something about it.

The Roman characters.—Since the arrival of missionaries, the introduction by them of the Roman letters has quite superseded the use of the Arabic characters amongst the Malagasy, the only real Malagasy still retaining a knowledge of Arabic letters being a few of the kings and chiefs of the south-east tribes. Writing and reading in the Roman character is fairly well understood by the Malagasy, at every permanent mission centre, or large Hova station. Apart from the instances given above, all the Malagasy tribes, the Hovas excepted, have no knowledge of reading and writing. Generally speaking all the extensive Sakalava and Bara tribes on the west and the Mahafaly, Antandroy, Antanosy, and others in the south, are quite unacquainted with the use of letters, or figures, as we employ them; the nearest approach they have to anything like writing is shown in their habit of cutting notches in sticks or tying knots in pieces of string. Whilst at Manansua in South Central Madagascar I employed several men for a number of days to fetch material for building a new house. When the time came to pay them for their work, each man brought a piece of string, in which he had tied a series of knots denoting the number of days he had worked. At another time I employed an Antinosy man as foreman over a number of natives digging for fossils. This Antinosy could not write, so he cut some short sticks, according to the number of men working, and considering each stick to represent a certain man, he, every evening, when the day's work was over, made a notch in each man's representative stick. By this means he was able to give me a correct account of the number of days' work done by each man.

Wood carving and Pottery.—The art of decorating and carving is practised more or less throughout Madagascar. The Betsileo seem to be more elaborate in their designs and productions than any other of the Malagasy tribes: this is shown especially by their carved house posts, and numerous memorial posts. There are also some very elaborate pieces of work to be seen amongst the South Sakalavas, and in the Manansua district of the Antinosy. This carved work in the south and west is always used in some connection with the dead, either as memorial pillars, or else it takes the shape of an ornamental and decorated fence around the grave. The memorial pillars

amongst the Antinosa are carved in a variety of forms, sometimes full sized figures of men and women are set up on pedestals some 4 or 5 feet high. In other cases the memorial takes the shape of an obelisk placed on a pedestal some 5 or 6 feet high, on which a number of birds, and symbolical animals, as the crocodile or cattle are carved, and invariably a wooden bird is placed on the top of the obelisk. A great number and variety of these are found in the Antinosa country in South Central Madagascar. An idea of primitive carving is shown everywhere in Madagascar, by the peculiar devices and ornamentations given to their wooden spoons, and the elaborate zigzag and other patterns worked on their earthen cooking and water pots. Sticks also and pieces of bamboo, serving as snuff boxes, are often covered with zigzag patterns and outline sketches of men, birds, crocodiles and other things. This kind of ornamentation also comes into their weaving and cloth-making operations. I have a fine cloth made by Timpy, the wife of King Befanatriki, in the borders of which both cattle and crocodiles are represented.

DISCUSSION.

Colonel MAUDE said he had listened with great interest to the paper, which had been carefully prepared. He pointed out that no one who had been in the country doubted for a moment that the Hovas were of Malayan origin; the type of their features, as well as their language, conclusively established it. The wonder and marvel are how they came there, probably not over two hundred years ago; with a certain proportion of women too. The prevailing wind, however, for ten months in the year is easterly, proved by the enormous quantity of pumice stone, much of it covered with bivalves, which had attached themselves to it *en route*, cast up on the Eastern Coast of Madagascar, which began to arrive within about three months of the eruption of Krakatoa, and which still covers the eastern coast. (The exact sound of the word Malagasy is Mälägässy: the usual abbreviation being 'Gash; the French call them Malgâche.) While Colonel Maude was in Madagascar, about three years ago, a Hova died who perfectly remembered the first King of Mérima, Andrianampoinimerina, which fact also points to the recent date at which the Hovas established themselves as the ruling race of Madagascar.

NOTES on a COLLECTION of CRANIA of ESQUIMAUX, exhibited by Prof. A. MACALISTER, F.R.S. By W. L. H. DUCKWORTH, B.A., Fellow of Jesus College, Cambridge.

THE Cambridge collection has been enriched by six skulls, and a complete skeleton, of Esquimaux from Labrador, presented by E. Curwen, Esq., M.D., St. John's Coll., Cambridge. The accompanying table gives their principal measurements and indices, which depart in no very important points from those already recorded by other observers. With these are arranged similar figures relating to the other crania of Esquimaux in the University Museum. It may be added that the ten specimens as a series are characterised by (a) the small size of the nasal bones, (b) the form of the Foramen Magnum, which is long and in some cases almost pyriform, a backward prolongation encroaching on the squamous part of the occipital bone, (c) the tendency to reduplication of the infra-orbital foramina with persistent infra-orbital sutures.

As individuals, the following notes deal in the briefest way with features of interest:—

Catalogue No. 1832. Inscribed "Eskimo, Davis Straits, Dr. Skae."

This is a very large adult male skull with prominent cheek bones; foramen magnum very large; mandible wide with everted angles. The sphenoidal spines are of unusual size, and the remaining teeth well worn.

No. 1833. Skull of Eskimo, Holsteinborg, S. Greenland. Probably an adult female. The foramen magnum is of considerable size, with postcondylar foramina. The mandible is wide, and the sigmoid notch very shallow.

No. 1834. Skull of Esquimaux, Greenland, Macartney collection. This is the skull of an adult male; the facial parts are flat, but the nasal spine is long and sharp. The palate is of considerable width, the foramen magnum very long, the foramina ovalia are placed rather more externally to the pterygoid plates than usual.

No. 1867. Skull of Eskimo, from S. Greenland, purchased (from the Lowestoft Museum). The skull of an aged male, with edentulous upper jaw. The roof of the cranium can be removed, and thus the cephalic index can be calculated from measurements on the interior of the brain-case which more nearly represent the dimensions of the cerebrum. The internal measurements give a cephalic index of 74.3; the external 71.9.

No. 1868. Skull from Port Hope, Ailek, Labrador, presented by E. Curwen, Esq., M.D. This is a large and heavy male skull with massive jaw; the nasal bones are remarkably diminutive; the sphenoidal spines large; the foramen magnum long and oval.

No. 1869. Eskimo from Blackhead, Hopedale, Labrador, presented by E. Curwen, Esq., M.D. From a grave with bronze ornaments. This is an immensely long and rather high skull the facial bones have been in great part lost

DIMENSIONS OF SKULLS OF ESQUIMAUX.

Measurements.		1833	1834	1867	1882	1868	1869	1870	1871	1872	1873
Catalogue No. of Skull.		Adult ♂	Adult ♂	Aged ♂	Adult ♂	Adult ♂	Adult ♂	Adult ♂	Adult ♂	Adult ♀	Adult ♀
Age and Sex.		Adult ♂	Adult ♂	Aged ♂	Adult ♂	Adult ♂	Adult ♂	Adult ♂	Adult ♂	Adult ♀	Adult ♀
Cubic capacity ..	..	1385	1340	1550	1790	1480	—	—	—	1420	1225
Maximum length ..	..	183	178	192 (171)	198	183	202	171(?)	181(?)	181	180
Maximum breadth ..	..	130	130	138 (127)	142	138	133	128(?)	130	133	128
Basal-bregmatic height ..	..	128	135	136	141	145	140	—	139	139	129
Basal-alveolar length ..	..	94	97	—	101	104	—	—	—	98	91
Basal-nasal length ..	..	94	101	106	101	101	107	—	—	106	97
Orbital height ..	..	35	34	33	37	36	38	—	—	37	36
Orbital breadth ..	..	39	39	42	42	39	43	—	—	41	38
Nasal height ..	..	50	53	54	63	48	—	—	—	57	50
Nasal width ..	..	21	25	27	24	24	—	—	—	23	22
Cephalic index ..	..	71	73	71.9 (74.3)	71.7	75.4	65.8	74.9 (?)	71.8 (?)	73.5	71.1
Vertical index ..	..	69.9	75.8	70.8	71.2	79.2	69.3	—	76.8 (?)	70.8	71.7
Alveolar index ..	..	100	96	—	100	103	—	—	—	92.5	93.8
Orbital index ..	..	89.7	87.2	78.6	88.1	92.3	88.4	—	—	90.2	94.7
Nasal index ..	..	42	47.2	50	45.3	50	—	—	—	40.3	44
Palato-maxillary index ..	..	114	105.6	—	120	105.3	—	—	—	115.9	—
Facial (Köllman) index ..	..	55.1	52.2	(?)	49.3	52.2	—	—	—	62.3	55.1
Stephano-zygomatic index ..	..	85.4	74.6	78.7	74.3	91.5 (?)	76.1	—	—	86.15	81.1
Gonio-zygomatic index ..	..	89	—	77.9	72.3	83.5	79.6	—	—	77.7	83.5
Naso-malar index ..	..	105.3	106.2	113.6	106.7	106.1	—	—	—	108	103.6
Horizontal circumference ..	..	507	490	540 (?)	539	519	550	475 (?)	500 (?)	510	495

74 W. L. H. DUCKWORTH.—*Notes on a Collection of Crania.*

- No. 1870. Eskimo skull from Hopedale, Labrador, presented by E. Curwen, Esq., M.D. A long and high skull.
- No. 1871. Eskimo skull from Cape Ailek, Labrador, presented by E. Curwen, Esq., M.D. Foramen magnum very large; mandible massive with large teeth.

The three immediately preceding specimens have suffered so much from weathering that few remarks can be made with regard to them. The cranial portions seem to present the typical appearances.

- No. 1872. Skull of Eskimo female, Cape Ailek, Labrador, presented by E. Curwen, Esq., M.D. A large massive skull with flattened facial bones.
- No. 1873. Female skeleton from Labrador, presented by E. Curwen, Esq., M.D. The skull is small and the foramen magnum of remarkable shape, the nasal bones small, the sphenoidal spines long and sharp. The skeleton measures 1407 mm. in height; and the pelvis seems remarkably large in both transverse and conjugate diameter.

ANTHROPOLOGICAL MISCELLANEA AND NEW BOOKS.

PHOTOGRAPHY FOR ANTHROPOLOGISTS.

My only excuse for troubling the Anthropological Institute with this paper is, that I am a practical anthropological photographer of some experience, who has worked in, for that art, most trying climates; and, having experimented with nearly all the first class cameras, plates, and apparatus in the market, has found out what articles are necessary, and what makers can be relied on.

I work for the Ethnographic Department of the British Museum, and ventured in a communication with Mr. C. H. Read, who besides being one of my scientific chiefs, is also on the Council of the Anthropological Institute, and joint editor of "Notes and Queries on Anthropology," to point out that Chapter LXVII in that book did not seem to me to answer all the questions which an explorer who intended to photograph for anthropological purposes would be likely to ask. It appeared to me to be written from the point of view of a past master, who, knowing the subject himself, cannot understand how anyone else can be ignorant of it. The ignorant people, however, are on the whole in the majority, and it is for them that I write.

I do not propose to teach the explorer how to take photographs. He can easily learn that in any town, and certainly in London, where, not to mention other firms, lessons are given by the London Stereoscopic Company, and also, I believe, at the Polytechnic Institution. The mere taking of a negative, and the printing of the same on cold bath platinotype paper, are easily learnt, and this knowledge is assumed by me. The ordinary information in photographic handbooks is of very little use to the class of photographer for whom I am writing. These handbooks are written, either in the interests of some firm whose materials may be utterly unsuited to the climate in which our work has to be done, or they give a long list of apparatus, plates, developers, and printing processes, from which the anthropologist can choose, but no advice as to what will or will not do in extreme climates.

Also, I do not believe that the explorer will get much good by consulting trade journals, or leading firms. Special goods are chanted, and bewildering and contradictory statements made, by rival firms, whose first business it is to sell their own goods, nor have many photographers or tradesmen in England the

experience in extreme climates or in the class of work required by anthropologists, which would alone entitle them to advise.

Now, as regards the importance of photography to the anthropologist, particularly when the work is carefully done, there cannot be two opinions. Mr. Read in the publication above referred to says, "The best plan seems to be to devote as much time as possible to the photographic camera, or to making careful drawings. By these means the traveller is dealing with facts about which there can be no question, and the record thus obtained may be elucidated by subsequent inquirers on the same spot, while the timid answers of natives to questions propounded through the medium of a native interpreter can be but rarely relied upon, and are more apt to produce confusion than to be of benefit to comparative anthropology."

I write for the information of would-be explorers, or recorders of ethnographic facts, and not for already skilled workers, though I propose relating details of my own procedure which may even be of use to the latter.

Properly taken photographs, with the additional explanatory letter-press, will be found the most satisfactory answers to most of the questions in "Notes and Queries on Anthropology." In Part I of that work, external characters could be illustrated, and large photographs of the face, in full face and profile, should be taken.

In posing the subject for these, the body must be upright, and the face so held that the eyes looking straight before the subject are fixed on an object on a level with them. (Exactly as fixed for measurement in Plate II.)

Chapter No. VII in this part can be illustrated by photographs, as also No. XVIII, the attitudes and movements being taken to the best advantage with a hand camera.

Chapter XXI, physiognomy, can also be illustrated by photography, and development can be shown by photographs taken of subjects at different ages. These should be stark naked, a full face and a profile view should be taken of each, and the subject should touch a background painted in black and white chequers, each exactly 2 inches square. All abnormalities, or deformations, whether natural or intentional, should be photographed; and in VII, medicine, and VIII, surgery, operations, bandages, &c., can be thus shown.

In Part II photography will be found of the greatest use in answering the questions accurately. The manufacture of different implements, weapons, &c. (each stage from the rough material to the finished article being shown), indeed almost every act of the life of a primitive people may be photographed.

With regard to the photographing of savage races the following hints may be of use.

It is absolutely necessary to have patience with the sitters, and to be in no hurry. If a subject is a bad sitter, and you are not using a hand camera, send him away and get another, but never

lose your temper, and never show a savage that you think he is stupid, or, on the other hand, allow him to think that, by playing the fool, he can annoy you, put off your work, or that to stop him you will be willing to bribe him into silence.

Before you pose a group of savages, have the camera (except of course in hand camera work) fixed up, and focussed for the spot where they are to stand. This can easily be done by marking a space on the ground within which they will be placed, and focussing sharply on some pieces of wood or stone placed in it. The dark slide should be in its place and all ready, so that as soon as the subjects are posed satisfactorily, the cap can be taken off the lens and the exposure made.

For ethnology, accuracy is what is required. Delicate lighting and picturesque photography are not wanted; all you have to see to is, that the general lighting is correct, and that no awkward placing of weapons or limbs hide important objects. This can easily be ascertained by the use of a small finder on the camera.

In any sitting group, where you are anxious to show the way in which the hands or feet are used in the manufacture of any articles, the camera can be made to look down on the objects, the swing back being used to focus with.

For want of the knowledge of better examples may I refer the intending photographer to my illustrated "Record of the Andamanese," executed for the British Museum, and partly finished. He will see the lines on which I work and will, no doubt, go and do better.

Before proceeding to practical details I will give one other quotation from Mr. Read, which, as sixteen years' experience with savages has taught me, contains one of the most valuable hints in the book "Savages will be found to answer more freely when the interrogator places himself on the same level as themselves, *i.e.*, if they sit upon the ground he should do the same."

The first question the intending photographer has to ask himself, before purchasing his outfit of photographic apparatus, &c., is: what sized negative shall I take? and before answering this he must consider the following additional questions:—

Where is he going?

What is the nature of the climate there?

Will he be stationary, or a traveller, when in the country?

What sort of accommodation does he expect to have?

In what grade of civilisation and friendliness are the people he is going to study?

Can he, when among them, easily procure fresh supplies from a well furnished depôt?

Lastly, how much money does he intend to spend?

As Regards Climates.

Extremes of heat and cold, by themselves, do not seem to affect good photographic apparatus much. In the former case it will be

necessary to use methylated spirit in the developer, or to ice the solutions, to prevent frilling; and in the latter, all solutions and the washing water should be warmed to about 70° F. In both cases all metal work should be covered with Russia leather in order that the fingers may not be blistered.

What one has to look out for, are, the extremes of dryness and damp, accompanied by either heat or cold, and of these two, after a long experience of the latter, I am inclined to think that the former is the worst.

Perhaps the best outfit for a very dry, hot climate would be that detailed below as the 5-inch by 4-inch outfit, with the addition that all the woodwork is replaced by metal, and that all the metal, including the lens mount, is covered with Russia leather.

The double backs should be of the solid, or American, not of the "book" form, and should also be, if possible, of metal. Messrs. Marion and Co. have a metal camera which should do.

If my instructions are carefully followed the damage caused by excessive damp can to a certain extent be guarded against.

A traveller will of course take a smaller outfit than a person who is stationary; and the accommodation the stationary person will meet with will influence him regarding the setting up of a studio and the working of anything larger than whole plate ($3\frac{1}{2}$ inches by $6\frac{1}{2}$ inches.)

If fresh supplies of photographic materials can easily be procured the original stock of plates and chemicals need not be very large, and the photographer can indulge in such things as isochromatic plates and films.

In parenthesis, I would remark that, while I am not connected with any particular firm, or anxious to advertise that firm's goods, it is necessary for me, for the purpose of this article, to state the makers from whom I advise the reader to buy his outfit, my sole reasons for giving these makers names being, that I have bought goods from them, and know from practical experience that these goods will do all that I say they will. I have therefore only mentioned the following firms:—

Messrs. Ross and Co., Dallmeyer and Co., Watson, Newton and Co., The London Stereoscopic Company, Marion and Co., Wratten and Wainwright, and Mr. P. Meagher.

Messrs. Newton and Co., of 3, Fleet Street, will manufacture almost any scientific apparatus which may be ordered, and their work is excellent.

I will now describe the different outfits I recommend for fixed cameras, commencing with the smallest, and leaving hand cameras till later. The additional articles required for all outfits will be mentioned hereafter, the present details being of cameras, lenses, &c., only.

Outfit No. 1.

A square, 5-inch by 5-inch, camera, of mahogany brass bound, with Russia leather bellows. Double extension. It should have

double swing back, and rising and shifting fronts, to take a 4-inch by 4-inch plate either way. Six brass bound double backs required, and two lenses, one Ross' 8-inch by 5-inch Rapid Symmetrical, and one Dallmeyer's No. 1A Wide Angle Rectilinear Lens. One drop shutter for rapid work. One stout tripod stand, and metal tripod head. One focussing glass. One pocket level.

A focussing cloth, 5 feet square. The camera, double backs, lenses, &c., will be in a solid leather case, lined with baize, which should have a lock, and the whole should have a stout waterproof cover.

With the above, excellent work can be done. By stopping the lens down to F/64, negatives can be taken which will stand enlarging to 15 inches by 12 inches, and in this way very good life-sized portrait heads can be done.

(It will be seen that I recommend throughout the employment of lenses a size or two larger than the size advertised to cover the plate used. The reasons for this are obvious.)

Outfit No. 2.

Stereoscopic work is well suited for anthropological studies, as in the stereoscope small details will be noticed which would be overlooked in an ordinary print. The following is therefore recommended.

1. 8-inch by 5-inch camera with double extension, &c., having three movable fronts, and a movable partition down the centre which will be inserted when stereoscopic work is undertaken. On one front should be two of Ross' 8-inch by 5-inch Rapid Symmetrical lenses, accurately paired. On another front should be a Ross' 10-inch by 8-inch Rapid Symmetrical Lens, and on the third a Dallmeyer's Wide Angle Rectilinear Lens No 1. The six double backs, tripod stand, case, &c., will be needed as in the previous outfit.

An advantage in this camera is, that either half of a stereoscopic view can be used as an ordinary 5-inch by 4-inch plate, for printing magic lantern slides direct, or for enlarging.

Note.—Always stop your lens down when taking stereoscopic slides, and give the plate a very full exposure. The camera must be accurately levelled.

For persons who are likely to move about much the following is perhaps the largest size which can be taken with comfort.

Outfit No. 3.

A square, whole plate camera, double Extension, fitted with Ross' 10-inch by 8-inch Rapid Symmetrical Lens, and with Dallmeyer's No. 1 Wide Angle Rectilinear Lens; also with six double backs, and all the additional articles mentioned in Outfit No. 1, which should be accepted as the guide for the sort of camera to be bought.

With this a smaller camera will be found more useful and practical than having loose carriers for smaller plates in the double

backs of the large camera, and I should advise the addition of the camera, &c., in No. 1 Outfit.

Note.—With such an outfit much very useful work can be done.

Outfit No. 4.

This would only be purchased by those who were likely to be stationary for a long time in one place, with easy access to the savages, and with a studio, &c.

15-inch by 12-inch square, double extension camera, fitted with Ross' 18-inch by 16-inch Rapid Symmetrical Lens, and with Dallmeyer's 18-inch by 16-inch Wide Angle Rectilinear Lens. Also, with six double backs in a separate case, a large tripod stand, and a studio stand.

With this, Outfit No. 2 should also be bought, and a hand camera would certainly be used.

For the guidance of purchasers I would state that I have all the cameras mentioned, besides others, and find a use for each. My cameras are square, double extension, by P. Meagher, and my lenses are, as mentioned above. Goerz's Double Anastigmatic Lens, Series III, will also be found most useful in scientific work.

Note.—Either Iris diaphragms should be used with the lenses, or the Waterhouse diaphragms should be pinned together.

The stereoscopic negatives, after one print in platinotype has been taken from them for record, should be sent to England to some firm of specialists, such as Mr. Chadwick, or the London Stereoscopic Co., in order that the transparencies can be prepared from them.

Lantern slides, perhaps the best form for examining small photographs, are also best made by some such firm, as the explorer will doubtless wish to spend his time in recording anthropological facts, and not in the operations of photography.

Square cameras with double swing backs, and rising and shifting fronts are the best; large tripod heads, and stout, long, tripod legs, are advisable. These legs are best made in one piece, and sliding legs should never be used.

With each of the above outfits, the following articles must be procured :—

Plates.—For ordinary work the best plates I know of are Messrs. Wratten and Wainwright's "Instantaneous" brand, and for very rapid work, the same firm's "Drop Shutter Special." Each dozen of plates should be separately sealed up in tin, and they will thus keep good for years, if stored in a dry place. A gross is a good number to take, if further supplies can be sent for.

If within easy communication of England, Edwards' Isochromatic plates are first class, and give special results which can be got with no other plate, but they will not keep well.

Films will not do.

(For lantern slides, or transparencies, if they are to be made in the field, which I do not advise, Marion's Chloro-Bromide plates are the best, and should be developed with the old Iron-Oxalate Developer.)

Varnish for Negatives.—Wratten and Wainwright's Crystal Varnish is good, as it can be applied cold. It is merely used as a protective, and can be removed, and a stronger varnish permanently applied, in England. A pneumatic plate holder will be wanted.

Printing Paper.—The Platinotype Company's Cold Bath Paper is the best, being simple in its working, and permanent. It keeps, as sent out by the Company, for a year, if the tins are unopened. A tin should not contain more than twenty-four pieces, and the operator should so arrange his work as to print off the entire contents of a tin in one day.

Focussing Cloths.—These should be, for the small cameras, 5 feet square, and for the large, 6 feet square; they should be of velvet, lined with yellow or red material, and in addition to a box of safety pins which should always be carried, half a dozen safety pins should be kept stuck in the cloth in order to fasten it round the lens, the legs of the stand, &c. The camera must always be entirely covered by the cloth, and it is not a bad plan to have two cloths for each camera.

A good *focussing glass*, as kept by any good firm, is required, and should always be used as our object is to get great and accurate detail, not to make pictures. "Fuzzygraphs" are quite out of place in anthropological work.

The *lens caps* must always be secured by a piece of cord (silk fishing line), to the lens mount.

The *screw* must be secured to the tripod head by a chain, and this head must be covered with leather or felt (sewn, not glued, on).

Use brass for all metal work, and avoid aluminium.

A *good shutter* will be required for instantaneous work. The Wollaston, Bausch and Lomb, Thornton-Pickard, and common metal drop shutter, are the best. The India-rubber bulbs and tubing for releasing the shutter pneumatically are useless, and the release should be given by a metal trigger.

Glass measures of assorted sizes are required. Say, one 40 oz.; two 20 oz.; two 8 oz.; and two 1 oz., divided into minims.

Two ebonite stirring rods should be taken.

French chalk, as a lubricant for woodwork, and vaseline for metal, must be carried. Dry curd soap is also a good lubricant for woodwork.

All apparatus should be in waterproof cases.

A couple of Winsor and Newton's Sketching Umbrellas will be found most useful, one to shade the camera, and the other to shade the subject.

They can be fastened into the ground.

The camera and the case of double backs should always be shaded by an umbrella when working in the open.

Each double back should be kept in a separate, numbered, silk or velvet bag. It should only be taken out of this bag, when under the focussing cloth, and, after exposure, should be replaced in the bag under the cloth.

Each lens should be kept in a locked leather box, lined with velvet.

Chamois leather should never be used as a lining for anything.

It is cheapest in the end to purchase the best things. All woodwork should be of mahogany; all leather, Russia. No iron, or metal that will rust, should be used. Weight is of no consequence. Strength is.

Camera level.—Good ones are supplied by all dealers.

A good dark tent is required. Both Meagher, and Wratten and Wainwright, supply these. Get the largest you can carry.

A couple of 5-inch, flat, camel's hair brushes are required for dusting the dark slides and plates.

Good handbooks on photography are: "Burton's Photography," "The London Stereoscopic Company's A.B.C. of Photography," Hepworth's "Photography for Amateurs," Wall's "Dictionary of Photography," and Ewing's "Photography for Amateurs in India."

Dishes.—The best dishes are of ebonite or *papier maché*, and no glass or crockery should be used.

Six dishes of the former material are required, which should be so sized as to pack one within the other in a nest, the smallest dish in the nest being of the largest size actually required for the work.

Six large *papier maché* dishes will be found very useful for the developing and clearing solutions used in platinotype printing.

A washing tray for the negatives, and another for the prints will be required. There are plenty in the market, and any strong, simple one can be chosen. Do not buy one to be used only with a tap or running water. Tylar's Metal Folding Washing and Drying Racks are convenient, and can be used with a bucket of water.

Note.—Do not attempt to wash negatives or prints in streams, and see that your washing water is free from grit.

Wash each plate well after developing, and after fixing when five minutes washing should be given to each plate separately. The backs of the negatives can be cleaned, while wet, with a tooth brush.

Printing Frames.—Six will be sufficient. All dealers keep good makes of these.

Chemicals.—Both for portability, good keeping, and other qualities, I advise a certain developer and fixing bath, as follows:—

Developer.

A.	Sulphite of soda	..	..	..	6 oz.
	Hot water	..	..	..	10 oz.
	Sulphuric acid (pure)	..	..	..	1 drachm.
	Pyrogallol	..	..	..	1 oz.

(Dissolve the sulphite of soda in the hot water, add the sulphuric acid, and pour the whole into a bottle containing an ounce of pyrogallol. Keep the solution in a blue glass, stoppered, bottle.)

B.	Anhydrous monocarbonate of soda ..	3 oz.
	Ferrocyanide of potash	6 oz.
	(Yellow prussiate.)	
	Hot water	20 oz.
C.	Potassium bromide	1 oz.
	Water	6 oz.

(A portion of this can be conveniently kept in a dropping bottle.)

To develop a whole plate take—

3 drachms of A.

6 drachms of B.

20 minims of C., and make up to 6 ounces with water.

If the temperature is very high add 1 oz. of spirits of wine to the above, to prevent frilling.

Use boiled and filtered water for the solutions.

Just flush your plate with water before developing, in order that the developer may flow evenly.

Do not touch the gelatine surface of the plate with sweaty or oily hands, but handle the plate by the edges only. Take care that no perspiration drops on the plate in the dark room manipulations.

Keep a stick of paraffin wax in the dark room, and rub it round the edge of the plate just before developing. This often prevents frilling.

Fixing Bath.

Hyposulphite of soda	16 oz.
Sulphite of soda	2 oz.
Sulphuric acid	1 drachm.
Chrome alum	4 drachms.
Hot water	64 oz.

Dissolve the sulphite of soda in sixteen ounces of water, and add the sulphuric acid. Dissolve the chrome alum in eight ounces of water.

Dissolve the hyposulphite of soda in the remaining water. Add the sulphite solution to the hyposulphite, and then add the chrome alum solution.

The plate should be allowed twenty minutes in this bath, and should then be well washed. I occasionally rock my fixing bath, when plates are in it.

A short washing in tepid running water is better than a long soaking in cold water.

The above bath will keep for months.

The Chemicals you will require, therefore, will be, for a small outfit, about :—

Pyrogallol	16 oz.
Sulphite of soda	12 lb.
Sulphuric acid	16 oz.

Potassium ferrocyanide	6 lb.
Anhydrous monocarbonate of soda..	4 lb.
Potassium bromide	1 lb.
Hyposulphite of soda	16 lb.
Chrome alum	2 lb.
Hydrochloric acid	6 lb.
Platinotype developing salts ..	6 lb.
Crystal varnish	12 bottles.

A dozen tins of cold bath platinotype paper, each tin containing two dozen pieces might be taken.

In addition to the above-mentioned cameras, for such purposes as recording the altitudes and movements of savages, and certain ceremonial and other details, a hand camera will be necessary.

There are several of these in the market, and very few of them would be of any use to an anthropologist. After much experience with them I can only recommend the following :—

Ross' 5-inch by 4-inch Portable Divided Camera, with Wollaston shutter. (This can be used as either a hand or stand camera, is a very good article, and can be considered an outfit by itself. It has double backs, and six of these should be bought. Do not use a changing box.)

The "Twin Lens Ideal" is a good camera, and so is the "Twin Lens Artist's," but perhaps the most suitable is the London Stereoscopic Company's No. 2 Binocular Camera, with eighteen plates and Zeiss Lens.

Instantaneous hand camera work is never as good as stand camera work, except perhaps in the hands of specialists.

In the above, and indeed in all cameras, care should be taken that the lenses, and all parts of the apparatus, are easily accessible for cleaning and petty repairs.

A *Developing Lamp* will be required if work is being done at night in an ordinary room, and any of the firms I have mentioned will supply a good one. There are some very good dark room candle lamps in the market, which might be bought if you are going where kerosine oil is not procurable, and candles can be carried. In case the glass breaks, take some spare golden and ruby tissue.

Have as much *safe* light as is possible. Rock the negative during development, and cover the developing tray with a lid of blackened tin or wood.

A *Bottle of Dead Black* for re-blackening the interior of lens mounts, and the woodwork of cameras and double backs, is useful; as is also some enamel paint or varnish for repairing *papier maché* trays.

(A pin-hole in the bellows can be mended with a little fluff or lint attached by some dead black.)

A walking-stick, or the bough of a tree, is a good thing to rest a hand camera against to steady it. Very good clamps are sold with which to fasten hand cameras to trees or posts.

Cleaning.—This is an important item.

Lenses should be unscrewed every week, and lightly wiped with an old soft silk handkerchief.

All leather should be frequently wiped, and may be slightly oiled with camphorated vaseline.

Examine your cameras inside occasionally to see that they are light tight, and wipe the inside of the bellows, or luminous fungi may collect and fog your plates.

Oil the hinges of the legs of the tripod stand, and clean the points. All trays, &c., should be thoroughly cleaned and wiped after each time of using.

Note.—I have often enlisted native servants and savages, who may be the subjects with whom I am working, to do all this mere manual work of cleaning, and they seldom break things.

Packing.—It is better to use a number of small stout wooden or wicker boxes, than one or two large and heavy ones. Corrugated paper, and crumpled, *not folded*, cloths are capital packing material. Coarse dusters which are used for cleaning the trays can be used for packing. Each bottle or jar should be in a separate compartment. A wisp of hay and paper, wrapped entirely round each bottle, is good.

As regards *lighting, backgrounds, and studios*, I can say little as circumstances alter cases so much.

Open air groups are more satisfactory on a dull day than when there is brilliant sunshine, on account of the very heavy shadows in the latter case obscuring detail.

In brilliant sunshine in the jungle a very objectionable spotty lighting is often found.

In full face photographs care should be taken that the lighting is even, and not with a high light on one side of the face, and a heavy shadow on the other. A reflector of some white material is here useful to lighten the shaded side of the face.

On no account should the subject face a brilliant sun.

A dull grey or drab background, being unobtrusive, is the best. A wall slightly out of focus may be used. If the only available background is foliage, it should be as much out of focus as possible, unless it is essential to the subject. The smoke of a damp leaf fire makes a good background, and is of use in blotting out foliage, &c., which are not required in the photograph.

With a 15-inch by 12-inch camera some sort of studio is a necessity on account of its weight, &c., as the operator will be less fatigued by working under shelter from the sun. A good studio stand will be required, and will be found most useful.

A substitute for a properly constructed studio may be made by building two sheds of matting, facing each other, and walled in on the top, back, and two sides. Coarse blankets could be hung for a background. These sheds might be 10 feet deep and 15 feet apart.

A very good form of studio is a long building, 14 feet high to the eaves, and open from the eaves to the ground on the north side, if north of the Equator, or on the south side if south of it,

In the tropics this is better than a studio with top lights of glass, on account of the heat of the latter.

The ends of the studio may be covered with a drab lime-wash for a background.

A couple of light, white reflectors about 3 feet square, and a good head and body rest will be found of great use in a studio.

In conclusion the following hints may be of some use.

Most of your work will be done with the rapid symmetrical lenses, and the wide angle rectilinear lenses should only be used when you are unable to get sufficiently far away from your subject to use the others, or when a wide angle is required for large groups with no distance in the background. They are also used in the thick jungle.

Keep a note book, and as soon as you can, take a print from each negative, and paste it into the book, writing a detailed description of the facts illustrated. Then, if your negatives are afterwards broken, your work can be reproduced from your note book.

The negatives, when varnished, should be packed in dozens, face to face (as received from the makers), with a piece of blotting paper between each, folded up in paper, tightly tied together, and then put into their original box. These boxes can then be packed away in a case well surrounded by crumpled shavings, or crumpled cloths.

Number all negatives and prints. Fresh arrowroot starch is good for mounting the latter, used as follows :—

After the print has been trimmed, place it on the mount, marking its position with a pencil. Then wet the print on the back until it is wet all through, paste all over the mount, put the print in its place, put a sheet of blotting paper over it, rub it down with a flat squeegee, and then, with a wet sponge, clean off the superfluous paste.

For trimming prints I use a set square and pencil, and then cut along the pencil lines with scissors. This will be found handier in the jungle than glass trimming shapes, and knives which continually require sharpening.

Have a large jar to keep the fixing solution in. Keep some spare stoppered blue glass bottles for the pyro, and small dropping bottles for the bromide. Vermouth bottles are useful for some solutions, being large with clear glass. Put vaseline on all corks and bottle stoppers, and when travelling tie these in.

If your focussing screen is broken, fix a dry plate, without exposing or developing it, and when dry and varnished it can be used as a substitute.

Arrange your negatives systematically. Lock up all apparatus from savages and others, and on no account let your camera get wet. Stick to one make of plates. Learn to count seconds correctly. Have labels or marks on your bottles so that you can distinguish them in the dark room. Overhaul your kit before starting on your day's work, and see all is present and in good order. Do not retouch or add clouds, &c., to scientific photographs.

Having purchased your apparatus, study it before you start, so that you may be a thorough master of it, and of the exposure developing, and printing, &c. (with the formula given), so that the difficulties of the technique of photography will not in any way hinder you, or take your mind off your anthropological work.

A friend recently wrote to me "that there would be plenty of money and people available for anthropological research, when there were no more aborigines."

Could not the Anthropological Institute take an active lead in this matter. A committee chosen from the members resident in England could ascertain exactly what work is required, and could then apportion this work among anthropologists residing in the several countries, and willing to undertake it.

The committee in England would collect funds to purchase collections, and supply apparatus, &c., to those workers who were unable to pay for them, as the Royal Geographical Society does. The results of the work, *i.e.*, the collections and photographs, could be deposited, say, in the British Museum, and the records could be published in the Journal of the Institute.

PORT BLAIR, THE ANDAMAN ISLANDS.

M. V. PORTMAN.

18th May, 1895.

Officer in charge of the Andamanese.

SEXUAL INFERIORITY.

BY EDWARD TREGGAR.

AFTER reading the paper by Mr. E. A. Crawley on the "Sexual Taboo" ("Anth. Jour." vol. xxiv, p. 219, *et seq.*), I am emboldened to offer the following remarks, because, without wishing to show eccentricity of thought, I hold that it is good for ethnologists to view all possible sides and aspects of any subject concerning the human race.

Noting the many different ways in which the social inferiority of women appears among the savage and semi-civilised peoples spoken of by Mr. Crawley, I consider that although all the questions arising from the many-sided problem cannot be answered at present, yet that on one of these at least a light may be thrown. The orthodox view of women's lower position is that man, because he is physically stronger than woman, has considered her to be tainted and defiled at certain periods mainly because he, the lordly animal, differs from her in her bodily constitution and sexual weaknesses. It is possible that such an idea may be a mistaken one; that what bears the superficial appearance of haughty cruelty may be the very reverse, and may have had its far off origin in a wise tenderness unrecognised and unappreciated by either sex in later generations.

Just as one of the proofs of the sisterhood of the sciences is that astronomy joins hands with geology and physics to demand an immensely long period through which the childhood of our planet must have passed, so does Anthropology come as another

sister to ask for a longer lapse of time than the six thousand years which as schoolboys we were taught was the world's age. In the vast spaces of time behind history great changes must have taken place in the races of mankind, and it is perhaps more than a guess of the modern scientist when he states that many barbaric or semi-barbaric peoples have at one time known a higher culture. One branch of Anthropology, viz., Philology, asserts that there can be recognised in languages of some races now not civilised and the vicissitudes that have affected words, traces of prior culture and of higher position in ancient days. Is it not possible then that in that night of time some of the barbarian customs of to-day may have had their origin in wise ordinances of kindly-hearted, far-seeing men who clothed their charity for the weak in the garb of religion and of law suited to the character of those with whom they had to deal?

Let us consider the question of the "impurity" of women from this point of view. It is probable that we see it at its best in the ordinances of Moses. The Israelitish woman was set apart, not only at the time of childbirth, but during her monthly periods. She was thus absolved from her usual household work, and had an interval of complete rest at a time when rest is of the highest hygienic value. The great prolific and recuperative power of Jewish women, whereby they have been able to keep their nation numerous and constantly increasing although the victims of centuries of oppression and dispersion, is probably owing to the rest and restoration of the bodily faculties on such occasions. Similarly among savage races, where the women are supposed to be defiled and to defile men and food by their touch at the time when they should be "separated," it may be that such a provision was the wisest and most merciful course possible. Beasts are preserved in their sexual relations by strong and comparatively noble instincts; when men rose sufficiently above the beasts to be no longer guided by instinct they needed restraint to prevent them "monkeying" with the sacred fount of life. That restraint (in my opinion) was given by religion in the case of the Jews and some other peoples, and in regard to savages by custom which is itself a kind of religion or the degraded descendant of a religion. For so long as the women were set apart, not allowed to touch the body or food or clothes of a man, so long was she sexually safe, and so long was the tribal life safe, and only then. What matter whether at such a time she was considered "holy" or "defiled"? The effect was the same, and the word *tabu* (taboo) has both such meanings; a better one still is that of "prohibited."

I put forward this view because as chief inspector of factories for New Zealand, I see, as men of my profession must, constant examples of the evil wrought by long hours of the standing position or of bodily toil on women, not only before and after childbirth but at the monthly period. If every woman could have a week out of every month during which she could cease to work (or better still, go to bed), we should have a far stronger generation

to succeed the present. Such a state of things is, I know, impossible in the present condition of industry and of society, but those men who were wise enough and strong enough to throw the ægis of religion and even of prejudice over the weaker sex in ancient days could teach valuable lessons to ourselves with all our pride of learning and discovery. Having lived much among savages I have learnt many lessons from them, I am not ashamed to say; and not the least was that the "defiled" woman of the barbarians has a time of recuperation allowed her which is denied to those of her sisters who dwell under the mock chivalry of civilisation.

"A History of the Hebrews." By R. Kittel. Translated by John Taylor. (Williams and Norgate.) Vol. i. pp. 312. 8vo. 1895. This is an English translation, with additions, of Prof. Kittel's German work on the Hebrews, two volumes of which were published in 1888 and 1892. The work is an attempt "to write the history of the ancient *Hebrew* people, from their first beginnings up to the time when, first in Babylonia and then in Palestine, they pass over into the small community of *Judaism*." The present volume contains sources of information and history of the period up to the death of Joshua.

"Ancient Rome and its Neighbourhood;" an illustrated handbook to the ruins in the City and Campagna. By Robert Burn. (George Bell and Sons.) pp. 292. 8vo. 1895. A guide for archæologists and travellers to the ruins of Rome and its neighbourhood. The volume is profusely illustrated and contains some good plans and maps which make it easy to discover the whereabouts of the many ruins.

"England's Mission to India;" some impressions from a recent visit. By the Right Rev. Alfred Barry. (Society for Promoting Christian Knowledge.) pp. 214. 12mo. 1895. The contents of this volume are:—Impressions of Indian Life; the advance of Material Civilisation: the advance of Intellectual Civilisation; the advance of Moral Civilisation, and the advance of Religious Civilisation.

"Mental Development in the Child and the Race," Methods and Processes. By James Mark Baldwin. (Macmillan and Co.) 8vo. 1895. pp. 496. This book is divided into sixteen chapters, i-vi of which "are devoted to the statement of the genetic problem, with reports of the facts of infant life and the methods of investigating them, and the mere teasing out of the strings of law on which the facts are beaded—the principles of Suggestion, Habit, Accommodation, &c. Chapter v gives a detailed analysis of one voluntary function, Handwriting. The theory of adaptation is stated in general terms in chapters vii and viii, and chapters ix-xvi are devoted to a genetic view in detail of the

progress of mental development in its great stages, Memory, Association, Attention, Thought, Self-consciousness, Volition."

"Primer of South African History." From original research in the Archives of Great Britain, the Netherlands, and the Cape Colony. By G. McCall Théal. (Fisher Unwin.) 8vo. 1895. pp. 139. A brief account of the territories of South Africa, with a list of the principal events from 1486 to 1895. The names of the leaders of the Cape Government from 1652 to 1895 are given.

"A Comparative Vocabulary of the Dialects of British New Guinea." Compiled by Sidney H. Ray, with a preface by Dr. R. N. Cust. (Society for Promoting Christian Knowledge.) pp. 40. 8vo. 1895. A comparative list of fifty-two dialects which are shown to fall practically into twenty-five languages. A map illustrative of the New Guinea languages accompanies the volume.

"The Story of 'Primitive' Man." By Edward Clodd. (George Newnes, Ltd.) pp. 206. 12mo. 1895. This volume gives an outline of man's early history, his place in the Earth's Life-history, his place in the Earth's Time-history, an account of the Ancient Stone Age, the Newer Stone Age, and the Age of Metals. The volume is fully illustrated, contains a list of authorities consulted, and has a good index.

"An English-Zulu Dictionary;" with the principles of Pronunciation and Classification fully explained. By Rev. Charles Roberts. 2nd edition, with supplement. (Kegan Paul.) pp. 267. 8vo. 1895. Contains Zulu for about 18,000 English words, and therefore will be of much value to students of the language.

"Reason and Religion," or the leading Doctrines of Christianity. By the Rev. R. E. Hooppell. 2nd edition. (Henry Frowde.) pp. 200. 8vo. 1895. A course of sermons giving a connected view of the teachings of Christianity.

"The Great Dominion: Studies of Canada." By George R. Parkin. (Macmillan.) pp. 251. 8vo. 1895. The greater part of the matter contained in this volume appeared originally in the "Times." It "touches upon the most significant conditions of Canadian life, the most important of the problems which confront Canadians, and those external relations which have the greatest general interest." Three good maps accompany the volume.

"The American Commonwealth." By James Bryce. 3rd edition. (Macmillan and Co.) 2 vols. pp. 724, 904. 8vo. 1895. This work gives a detailed account of the American Commonwealth—the National Government, the State Governments, the Party System, Public Opinion, Illustrations and Reflections

and Social Institutions. This edition has been revised throughout, and all difficult and controverted points have been reconsidered, the constitutional changes in the States since 1889 have been noted, and the figures of population have been corrected by the census returns of 1890, those relating to education by the latest available Report of the Bureau of Education.

"The History of Greece," from its commencement to the close of the Independence of the Greek nation. By Adolph Holm. (Macmillan and Co.) Vols. i, ii. pp. 432, 535. 8vo. 1894-95. This work is a translation from the German and will be completed in four volumes. The first volume takes in the history of Greece up to the end of the sixth century B.C., and the second volume gives a history of the fifth century B.C. So far as we can judge from the two volumes before us the whole work will furnish us with a pretty complete history of the Greek nation.

"The Peoples and Politics of the Far East;" travels and studies in the British, French, Spanish and Portuguese Colonies, Siberia, China, Japan, Korea, Siam and Malaya. By Henry Norman. (T. Fisher Unwin.) 8vo. 1895. pp. 608. This book is, as the author tells us, the result of nearly four years of travel and study in the countries and colonies of which it treats. As the author has only described and discussed the places that he actually visited, and as his information was derived from the local authorities and best-informed residents, the accounts of the different localities may be accepted as reliable. It is a well got up volume, and contains sixty illustrations and four maps.

"The Zulu-Kafir Language," simplified for beginners. By the Rev. Charles Roberts. 3rd edition. (Kegan Paul and Co.) pp. 177. 8vo. 1895. This book is arranged on the author's own lines, which experience has induced him to believe is best for beginners. It seems to us a useful book for the purposes for which it is intended.

"The American Commercial Policy," three historical essays. By Ugo Rabbeno. 2nd edition. Translated at the Translations Bureau, London. (Macmillan and Co.) pp. 414. 8vo. 1895. The titles of the three essays in this volume are:—The English Commercial Policy in the North American Colonies; the causes of the Commercial Policy of the United States; and the Theory of Protectionism in the United States and the Historical Circumstances of its Development. These essays explain certain facts which during a long period of time have been taking place in the United States, and from them conclusions are drawn which, though as yet only referable to that country, may perhaps after other researches be also applicable to other nations.

"The Chinaman in his own Stories." By Thomas G. Selby. (Charles H. Kelly.) pp. 210. 8vo. 1895. Translations of

Chinese stories published with the idea of giving a brief glance at Chinese life through Chinese fiction.

"On certain phenomena belonging to the close of the last Geological Period," and on their bearing upon the Tradition of the Flood. By Joseph Prestwich. (Macmillan and Co.) pp. 87. 8vo. 1895. Arguments and evidence in favour of the hypothesis of a comparatively recent submergence of Western Europe, and of the Mediterranean coasts.

"Outlines of Roman History" from 133 to 27 B.C. By A. H. Allcroft and W. F. Masom. (W. B. Clive.) pp. 287-400. This is a reprint from the "Tutorial History of Rome," and forms a useful volume of the "University Tutorial Series."

"The Story of Africa and its Explorers." By Robert Brown, M.A., Ph.D., &c. (Cassell and Co.) Vols. i.-ii. pp. 312, 312. 4to. 1892-93. This adds another to the list of Dr. Brown's very readable works. The contents of the two volumes before us are (vol. i) the Guinea Traders, the Corsairs of Africa; the tale of Timbuctoo; the Niger: (vol. ii) the river of Egypt; the Great Lakes; across the Continent; the Congo. Every chapter is copiously illustrated with scenes, maps, plans of localities, natives, &c.

"The American Antiquarian." Vol. xvii. No. 2. The Hidery Story of Creation, by J. Deans. Notes on the Kootenay Indians, by A. F. Chamberlain. An Aboriginal War Club, by J. Wickersham. Palestine Exploration, by T. F. Wright. Anthropomorphic Divinities, by S. D. Peet. Prehistoric contact of Americans with Oceanic peoples, by Prof. C. Thomas. The silver vessel from Gundestrup; and Ethnographic and Literary Notes.

"The Journal of Mental Science." Vol. xli. No. 173. A review of the influence of Reflex and Toxic agencies in the Causation of Insanity and Epilepsy, by F. St. J. Bullen. Lunacy Administration in Berlin and in Scotland, with special reference to the care of the Insane in Private Dwellings, by J. Sibbald. Impressions of a flying visit to a Dutch asylum, by M. D. Macleod. The Spastic and Tabetie types of general paralysis, by R. S. Stewart. Tuberculosis Disease and its treatment in Irish asylums, by Dr. Finegan. The effect upon Mental Disorders of intercurrent bodily disease, by E. Goodall and F. St. J. Bullen. The relationship between general Paralysis and chronic Renal Disease, by H. C. Bristowe. The breaking strain of the ribs of the Insane, by A. W. Campbell. Current opinion on Medico-Psychological questions in Germany, as represented by Prof. L. Meyer, of Göttingen, by A. R. Urquhart.

"L'Anthropologie." Tome vi. No. 3. General considerations on the Yellow Races, by Dr. E. T. Hamy. Infantilism, Feminism,

and the ancient Hermaphrodites, by H. Meige. Studies in pre-historic ethnography, by E. Piette. Sculpture in Europe before the Greco-Roman influences, by S. Reinach.

"Transactions and Proceedings of the Japan Society." Vol. ii. Pt. 2. The influence of Europe on the Art of Old Japan, by M. B. Huish. The family relations in Japan, by Consul Daigoro Goh.

"Journal of the Royal Institution of Cornwall." Vol. xii. Pt. 1. Mullion Island, by H. Fox. The new Californian stamps at Dolcoath mine, by J. Thomas. The climate of West Cornwall, by E. Kitto. On the origin and development of Ore Deposits in the West of England, by J. H. Collins. The Rude Stone Monuments of Cornwall, by R. N. Worth. Notes on Duloe Circular Enclosure, by Rev. W. Iago. Recovery of a Lost Ring, communicated by Rev. Canon Saltren Rogers. Inscribed Stones of Cornwall, by Rev. W. Iago.

"The American Anthropologist." Vol. viii. No. 1. Stone Art in America, by J. W. Powell. The Huacos of Chira Valley, Peru, by S. M. Scott. Caste in India, by J. H. Porter. Micmac Customs and Traditions, by S. Hager. The writings of Padre Andres de Olmos in the languages of Mexico, by J. C. Pilling. Chinese Origin of Playing Cards, by W. H. Wilkinson.

"Journal of the Asiatic Society of Bengal." Vol. lxiii. Pt. 1. No. 4, and vol. lxi, extra number. (No. 4.) On the Hypothesis of the Babylonian origin of the so-called Lunar Zodiac, by G. Thibaut. Further observations on the History and Coinage of the Gupta period, by V. A. Smith, and note by Dr. A. F. R. Hoerne. The Tribes, Clans, and Castes of Nepāl, by Captain E. Vansittart. (Extra No.) The Mihrān of Sind and its tributaries; a Geographical and Historical Study, by Major H. G. Raverty.

"Revue Mensuelle de l'Ecole d'Anthropologie." Ann. v. Nos. iv-vi. (iv.) Asia, by Fr. Schrader. Notes on the Ethnology of the Morvan, by Ab. Hovelacque, and G. Hervé. (v.) Lacustrine populations, by G. Hervé. Indexing Galic Neolithic Crania, by Ph. Salmon. (vi.) Sentiments and Knowledge, a course of Physiological Anthropology, by L. Manouvrier. Prehistoric Ethnology, by Ph. Salmon.

"The Scottish Geographical Magazine." Vol. xi. Nos. 4-6. (4.) British New Guinea, by Sir W. MacGregor. Beira, by A. C. Ross. On the areas of the land and water of the Globe, by H. Wagner. (5.) Manchuria, by Rev. J. Ross. The "Challenger" Expedition. Arctic Research before Franklin, by W. S. Dalgleish. M. Elisée Reclus, and the "Geographie Universelle." The Caucasian Highlands: a Physical, Biological, and Ethnographical

sketch of Svanetia, by V. Dingelstedt. The Baltic and North Sea Canal.

"Proceedings of the Society of Biblical Archæology."
Vol. xvii. Pt. 4. The Book of the Dead, by P. Le Page Renouf. The name Shinar, Genesis xi, 2; and the meaning of זמר in Genesis xliii, 11, by Rev. C. J. Ball. Some Assyrian Alliterative Texts, by S. A. Strong. Inscription of the time of Amenophis, by Dr. A. Wiedemann.

THE JOURNAL
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ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

APRIL 9TH, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The presents that had been received were announced and thanks voted to the respective donors.

Dr. G. W. LEITNER exhibited some maps of Chitral and surroundings, and made remarks on the tribes of the district.

The following papers were read:—

“Four, as a Sacred Number.” By Miss A. W. BUCKLAND.

“The Miser’s Doom”: A Modern Greek Morality. By JOHN L. MYRES, Esq.

“Ceremonies observed by the Kandyans in Paddy Cultivation.” By T. B. POHATH KEHELPAUNALA, Esq.

“Lex Barbarorum of the Daghestan.” By Prof. MAXIME KOVALEVSKY.

FOUR, as a SACRED NUMBER.

By A. W. BUCKLAND.

WHEN collecting materials for my paper upon "Points of Contact between Old World Myths and Customs, and the Navajo Myth, entitled 'The Mountain Chant,'" I found myself constantly confronted with the fact, that, amongst almost all the Red Indian tribes, the number *four* and its multiples had a sacred significance, having special reference to the cardinal points and to the winds which blow from them; the sign and symbol of this quadruple nature-worship being the Greek, or equal-armed cross.

This conclusion had been arrived at long ago by Brinton and various students of Mexican and Mayan sculptures and hieroglyphics, for it is well known that the cross, in various forms, is a prominent object in Mexican and Central American pre-historic picture writings and sculpturings, and it appears to me that the continued use of the same symbol, with apparently the same meaning, among the various Red Indian tribes of to-day, is a matter of considerable anthropological interest, especially when it is remembered that as far as can be seen, there remains among these tribes no trace of the exceptionally bloody rites of ancient Mexico.

Mr. Holden, of the Smithsonian Institute, in treating of the Maya hieroglyphs, identifies the gods of the Mayas with the four great gods of Mexico, and shows the prominence of the number four in all. Huitzilopochtli is represented with four hands; to his temple "there were four gates," in allusion to the form of the cross. Solis says, the war-god sat on a throne supported by a blue globe. From this, supposed to represent the heavens, projected four staves with serpent's heads." The cross was also one of the symbols of Quetzalcoatl, and one of his titles is "The lord of the four winds," of which this was the sign. The cross is a prominent object in the Palenque tablet, and there can be little doubt, that, wherever found, it represents the winds, or the cardinal points, of which the bearer is supposed to be the god or guardian; but whether the Greek cross and the St. Andrew's cross have the same significance is doubtful; both are introduced freely in the hieroglyphs, and the Tau cross is also found, but not so frequently. The Mexican paintings are however, more to our present purpose, for, in these, not only do we get the cross as a nature-symbol, but we find it associated with especial colours, such as, among the Indians of to-day, are typical of the cardinal points; and also with certain signs and

symbols, which can still be traced in the ceremonies observed by various tribes at their medicine dances.

Mr. Thomas, in the third Annual Report of the Bureau of Ethnology (Smithsonian Institute) reproduces some of the Mexican codices. Of one of these the "*Tableau des Bacab*," he says, "Rosny supposed it to be a representation of the gods of the four cardinal points," an opinion I believe to be well founded. The centre of this tableau is a cross or sacred tree. In another plate, copied from the Borgian Codex, four gods, evidently representing some astronomical facts, (Mr. Thomas thinks they denote the solar cycle of 52 years, thirteen in each), occupy squares surrounded by fanciful serpents, the head of each being turned towards a conventional sun in the centre, and one of these gods is represented lying upon a St. Andrew's cross, which was evidently his peculiar symbol.

In a reproduction in colours of a plate of the Fejervary Codex, the picture is in the form of a Maltese cross. In the centre stands a god apparently wielding a thunderbolt, whilst at his back appears four forked branches of a tree, forming a St. Andrew's cross. In each of the four compartments or arms of the Maltese cross, a tree is represented with two branches making a cross, with three blossoms at the end of each branch. In the centre of three of these sits a bird, whilst the fourth is occupied by a dog. These three birds and the dog reappear in the Ojibwa ceremony of the Midewiwin, where they are seen mounted on crosses or painted poles at the entrance to the lodges.

The colours of the Mexican MSS. are deserving of study, because there is every reason to believe that they also are typical of the cardinal points, although it seems almost impossible to know to which point any particular colour should be assigned. The colours are blue, green, red, and yellow, and as blue seems in many cases to be used for south, we may perhaps look upon it as representative of the south in this case also. The variations in the typical colours assigned to the cardinal points among the different Red Indian tribes dwelling in close proximity to each other are very puzzling to the student. For example, although the Navajos and Zunis both use white to denote the east, the colour employed by the Navajos for the west is yellow, but the Zunis use blue, whilst blue among the Navajos signifies south.

I have sometimes thought that it might perhaps be possible to trace the wanderings of these tribes through these varying colours, for it is conceivable that a tribe coming from the south, who had been accustomed to associate some natural object, say a mountain with the north, and to assign to it a certain colour,

would on settling to the north of that mountain, still associate the same colour with it, although it would no longer represent the north, but the south.

The same idea has appeared to me applicable to the mystical Swastika, which, alike in the old world and the new, would seem to typify the path of the sun in the heavens, and which is yet frequently found depicted with the arms turned in a contrary direction to the sun's course. Some writers see in this a male and female sun, but it seems to me much more reasonable to suppose that those using the reversed symbol came originally from a southern land, where, of course, the sun's path would be reversed, being east by north to west, instead of as with us, east by south to west. The reversed Swastika is found represented in Peru as well as in the sun-baskets carried by the gods in the great sand-paintings of the Navajos; and the same reversed position from right to left is observable in the birds' heads on the engraved shells found in American mounds, which birds' heads, surmounting looped squares, are usually regarded as denoting the cardinal points.¹ Dr. Colley March, however, who has studied this subject, supposes the two positions of the Swastika to denote, first the sun's path, and second the revolution of the stars in an opposite direction round the pole. The subject, however, is difficult, and I merely offer my own idea as a suggestion.

It would be impossible to refer to the innumerable instances among the American Indians in which four is employed to designate sacred objects, always in reference to the cardinal points, but the subject comes out strongly in the great Navajo epic, which was the subject of my former paper. The gods are all four in number and all range themselves one at each cardinal point, being painted in the colour appropriate to that point. There are four bear-gods, four porcupines, four squirrels, four long-bodied goddesses, four holy young men, four lightning birds, &c. The hero is allowed four days and four nights to tell his story, and four days are employed in his purification. The great corral made for the performance of the ceremonies is left open on the east side only, and all entering have to move round it to the south, following the course of the sun, and in all the ceremonies especial reverence appears to be shown to the east.

The great sacred sand-pictures² which are so remarkable a feature in these ceremonies, are all commenced on the eastern side, and that part is also erased first, whilst the patient is always seated facing the east.

¹ The square symbolizes the concentration of the four winds among the Navajos.

² I have seen somewhere that sand-paintings are also used in China.

These sand-pictures made and erased on four successive days are all constructed of four reduplications and multiples; thus, the first consists of four pairs of snakes crossed to make four St. Andrew crosses, and are surrounded by four longer snakes, one at each of the four cardinal points, and always in the colour assigned to that point. The four goddesses, or *long-bodies* of the third picture, although they stand side by side are each represented in the appropriate colours of the cardinal points to which they are related. These long-bodied goddesses appear to refer to a Mexican legend related by Sahagun, who says "the fourth figure was the *house*, and was dedicated to the west, which they called Cioatlampa, which is nearly towards the house of the women, for they hold the opinion that the dead women who are goddesses, live in the west, and that the dead men who are in the house of the sun, guide him from the east with rejoicings every day until they arrive at midday, and that the defunct women, whom they regard as goddesses, come out from the west to receive him at midday and carry him with rejoicings to the west.¹

The great corral of the Navajos seems also to be connected with a legend of the Zunis, which treats of a gigantic magic corral, wherein all the game animals were kept by the snail people, until discovered by Sha-la-ko, who informed his father Pa-u-ti-wa, the chief god of the Ka-ka, probably the sun. This god calls a council, and by his sacred power opens the magic corral first on the north side, when the great deer rushed forth to be seized by the mountain lion, the regent of the north; then the west side is opened and the mountain sheep escapes to be hunted by the coyote, regent of the west; next an opening is made on the south side, whence springs forth the antelope, to be seized and devoured by the wild cat; and lastly the east side is opened, and forth came the albino antelope, to fall a prey to the wolf. Then it is added that whilst these prey animals were satisfying their hunger the game began to escape through the breaks in the corral. Through the northern door rushed the buffalo, the great elk, and the deer, to be chased by the mountain lion, and the yellow sa-la-mo-pi-a to the world, where stands the yellow mountain, below the great Northern Ocean. Out through the western gap rushed the mountain sheep herded and driven by the coyote and the blue sa-lo-mo-pi-a towards the great Western Ocean, where stands the ancient blue mountain.

Out through the southern gap rushed the antelope, herded and driven by the wild cat and the red sa-lo-mo-pi-a toward the great land of summer, where stands the ancient red mountain.

¹ "Maya and Mexican MSS.," Cyrus Thomas, "Smithsonian Annual Report," 81-82.

Out through the eastern gap rushed the Ok-o-li, herded and driven by the wolf, and the white sa-lo-mo-pi-a, toward where "they say" is the Eastern Ocean, the "Ocean of Day," wherein stands the ancient white mountain.

Here will again be noticed the four cardinal points with their special colours, differing, however, from those of the Navajos; the Zunis also add two regions, one for the "Sky Ocean," presided over by the eagle, and portrayed as of many colours, and one for the under world, to which the mole and the black sa-lo-mo-pi-a follow the rabbits, the rats, and the mice, towards the four caverns (wombs of earth), beneath which stands the ancient black mountain; but the ceremonies take place in a square enclosure, and the number four and the cardinal points are in constant evidence.¹

The sa-lo-mo-pi-a so often mentioned are legendary monsters with round heads, long snouts, huge feathered necks, and human bodies. They are supposed to live beneath the waters,² and are represented by masked figures at the ceremonies.

The four mountains, with the two supplementary ones of this legend, doubtless denote the four earth pillars of eastern tradition, the "four corners of the world," represented in the Navajo legend by the four trees cut down to form the supports of the medicine lodge; in the *Perehara* ceremonies of Ceylon, as described by Miss Gordon Cumming, by the young tree cut into four, and erected as pillars in four temples, round which the bows and arrows of the gods are carried on four elephants.

Among the Ojibwa there is an initiation ceremony of four degrees, which takes place in an oblong enclosure with openings to the four cardinal points; within this is placed a sacred stone, and to the west of this, four posts, painted in emblematic colours, one of which is a cross, painted white with red spots; but the lower half of the trunk is squared to face the cardinal points, and coloured white on the east, green on the south, red on the west, and black on the north. There are four of these enclosures, in each of which a different degree of initiation takes place, and it is upon poles raised in front of these several lodges that the effigies of birds and of a dog are placed, which, according to the delineations given, exactly reproduce those of the Mexican MSS.

There are undoubted traces in the eastern hemisphere of reverence for the number four in connection with the cardinal points, some of which may be compared with the American ceremonies. Miss Gordon Cumming says that the dagobas, forming the commonest kind of grave in North China, from

¹ Zuni Fetiches, Cushing, "Smithsonian Report," 1880-81.

² Cushing.

Pekin to Shanghai, are all built on a square platform. In the great dagobas the centre is denoted by a square pillar rising about 4 feet, on which rests the casket of relics. The central pillar or monolith is placed exactly to face the four cardinal points and the square of the platform is also marked to face the points of the compass.¹

In my former paper I pointed out a remarkable ceremony which takes place at the Perehara in Ceylon, when, at the full moon, four priests, bearing four swords of the goddesses, attended by four assistants, row up the river, and at the first streak of dawn the four priests strike the water with their swords, describing a magic circle in honour of the sun, whilst the four attendants fill their water vessels within the magic circle thus described. In many other points this Perehara ceremony seems to touch upon American and ancient Mexican religious ceremonies, to one or two only of which I will now refer, such as the use of masks and high stilts by the performers, and of painted sticks to symbolize the divinity.

In the descriptions given of Mount Meru we find not only the four square figure carefully turned to the points of the compass, but also the colours, such as accompany the American cardinal points, for the south side is represented as of the colour of the lotus, the eastern as that of the ruby, the northern as that of coral, and the western as that of gold.

Gerald Massey, in that curious book called "The Natural Genesis," says, "on a gem copied by Maffei the tree of life is engraved with four oscilla suspended from its branches." This is the Roman and British Christmas-tree, only the pendants are limited to four, according to the Gnosis that has been lost in England, which made it the tree of the four cardinal points.

There can be little doubt that seven, which we regard as the perfect number, has been formed by the engrafting of a tripartite divinity upon the older religion, which saw in the four cardinal points the mythical supports of the heavens. "Four spirits stand, four powers preside, four winds blow, four waters flow at the four corners of the mount in the general myth of the world."²

The careful orientation of the Egyptian pyramids, and the four canopic jars wherein the viscera of the mummy was consigned to the guardianship of the regents of the four quarters of the heavens, show how far back in the old world this reverence for the points of the compass extended. We find many allusions to the same in the Bible, and the pyramids of Babylon were not only carefully oriented, but also painted in colours. Pythagoras

¹ "Two Happy Years in Ceylon," p. 388.

² "The Natural Genesis," Gerald Massey.

and Hermes both looked upon four as the perfect number, bringing, we may suppose, that idea from the east, and it is in India, China, and Japan, that we find the cardinal points still revered.

In Japan we are told that a child is placed on the floor, and towards whichever of the cardinal points he creeps so will his future be determined ; a priest meanwhile holds over him a paper wand (Gohei), praying to the “Kami,” or ancestors, that the right choice may be made.¹

When we compare old world customs and beliefs such as these with those of the American tribes, we cannot help seeing in them a link binding the east to the west, and helping to prove a common origin, if not of race, at least of myths and superstitions.

“*THE MISER'S DOOM:*” *A MODERN GREEK MORALITY.* By J. L. MYRES, M.A., F.S.A., British School of Archaeology, Athens.

[WITH PLATES VI, VII, VIII, IX.]

THE following is a brief sketch of an open-air performance which might be seen in 1893 in the streets of Athens, on any of the principal days of the Greek Carnival. Though, as is explained below, the text of the dialogue was not accessible, and very likely does not exist in writing at all, the account of the action may be taken as accurate and fairly full. The pictures which accompany it are reproduced from “snap-shot” photographs taken in the *Σύνταγμα*, or Place de la Constitution, in front of the palace and the principal hotels ; which are the more adequate because the performers, so far from shrinking, as so many natives do from being photographed, even stopped the performance at the critical moment, and insisted on grouping themselves in a more convenient way. In the first three pictures, however, the actors are quite unconscious of what is going on.

There is only too much evidence that many of the leading features of the modern Greek Carnival have been borrowed from the Italian custom, and that at a recent date ; and there is consequently the chance still open that this particular performance may prove to be derived from a western original. But even if so, it has become so thoroughly adapted, in its literary and dramatic form, to its present circumstances, that it seems worth while to describe it on its own merits as a modern Greek, if not a Romaic ceremony.

¹ “Symbolic Ceremonies of the Japanese.”



1. THE ANGELS WAITING FOR THEIR CUE.



2. "COME TO JUDGMENT."



3. THE SOUL IS EXTRACTED.



4. "WEIGHED AND FOUND WANTING."

The play is presented by six performers, of whom, however, two have nothing to say. Two represent angels; two, devils; and two, the miser and the chorus, are in ordinary costume. A seventh, in grotesque costume, helps the devils to keep the ground, and takes round a large tin money-box. All wear masks, and those of the devils are of calico and continuous with the rest of their dress. The "properties" are of the simplest: a common table, a chair, a large ledger, and a *κρεβάτι*, or thin native mattress with a pillow spread in front of the table. The miser is discovered seated at his table, poring over his book. He wears an old brown overcoat, a battered top-hat, and a livid and unpleasing mask. Round his waist is tied a broad belt of brown paper, with his name, *Φυλάργυρος*,¹ thereon in large black letters. To him enters a personage in a red jersey and cap, who remains on the scene throughout, and acts the part, now of a preacher, now of a chorus or explanatory commentator. In a dignified address he reproves the miser for his manner of life. The miser rises, protests against him, and then returns to his book. The preacher persists more vehemently, and, after a while, the miser gets up again, abuses him, threatens him with a stick, and sits down again to write. But now, too late, his conscience is aroused; his business contents him no more, and he paces up and down, while the preacher, in a loud voice, summons him to judgment, and retires. The miser takes one or two more turns, then falls upon his bed, and seems about to die. The preacher stands over him, and proclaims his fate to all. Meanwhile, the devils, who, in complete suits of black, with features outlined in red, huge eyes, and short horns of the black calico stuffed with wool, have been keeping back the spectators and scaring adventurous urchins with their long pitchforks, clear an avenue at the end farthest from the table, and take post behind the two angels, who have been awaiting their cue some 30 yards away beyond the crowd. (Pl. VI.) The archangel wears tights and short garments of pink and blue gauze, with tinsel wings behind his shoulders, and a very peculiar headdress above his cherubic mask. The other is less gorgeously attired, and wears a cylindrical hat with a plain veil of pink paper over his face. At a signal from the chorus, all four advance rapidly with a peculiar tripping gait towards the bed. The miser raises himself upon his elbow, and seems to plead for himself before the angels; but the archangel carries a sword, and, standing over him, makes believe to strike off his head (Pl. VII), while his companion draws out from his neck a small nude china doll, which represents the soul of the dead man, whereat the devils

¹ For *Φυλάργυρος*: itacism runs wild in popular Romaine spelling.

dance round with discordant cries, and try to seize and torment it. (Pl. VIII.) The angels drive them back, but at last consent to abide by the test of weighing. It is beyond the purpose of the present note to do more than recall the interest attaching to such a representation of a very early primitive religious idea. A pair of scales is brought, and the guilty soul is placed in one of them, its good actions being assumed to occupy the other. (Pl. IX.) A short pause, while the devils make feints with their weapons; then the soul's scale slowly sinks; its condemnation is pronounced, and it is given over to the tormentors, who struggle over it, gnaw it with their teeth, and make believe to impale it on their tridents, snarling and squealing with fiendish joy the while. The chorus pronounces a short epilogue, and points a seasonable moral—"If you would escape the miser's doom, *put your pennies in the box.*" The play is over; the miser rises in the sight of all, takes up his bed, and walks off with the rest of the troupe to the next convenient spot.

The performance is evidently got up with some care, and the actors, especially the archangel, are not without dramatic power of a kind. The dialogue is in rhyming iambic catalectic tetrameters (8,6,8,6 of our hymn-books), which is the regular Greek ballad metre; but as the words themselves are preserved with some jealousy, it is not easy to get a copy of them. Another version is said to be current in which the soul is at last redeemed from torment; and this statement is supported by the fact that in most other representations of the judgment of the balance, the good and not the evil is put with the soul into the scale which sinks; but this year (1893), at all events, the only rendering given in Athens was that described above.

CEREMONIES *observed by the KANDYANS*¹ in PADDY CULTIVATION.

By T. B. POHATH KEHELPANNALA.

IT may not be uninteresting to the members of your honourable Society to know something about the ceremonies observed by the Kandyan paddy cultivators, and I trust that the information which I have collected and embodied in this paper will not be considered altogether unprofitable reading.

After having selected a suitable plot of land for cultivation, the goiya (cultivator) presents himself before the Neket-ràla (village

¹ The Sinhalese of Ceylon are divided into two classes: those occupying the mountainous districts are called Kandyans, while those bordering the maritime districts—low country Sinhalese, whose habits and traditions differ much from their brethren—the uplanders. The Kandyan country was ceded to the British only in 1815.

astrologer) on a Monday or Wednesday with the customary offering of forty betel leaves and areca-nuts, and expresses his wishes in a humble attitude. The Neket-ràla then informs his petitioner, after certain astrological calculations, the circumstances upon which the success or failure of his undertaking depends. On an auspicious day (according to the Neket-ràla), the goiya, after partaking of *heel-bat* (the morning meal) wends his way to his land with a mamoty (a kind of hoe), his face turned towards the favourable direction of the horizon as indicated by the astrologer. Should the goiya on this journey encounter sights or sounds which portend failure—e.g., the hooting of an owl, the cry of a house lizard, the growling of a dog, the sight of persons carrying weapons capable of inflicting injury, &c.—he immediately turns back and retraces his steps homewards. Again the Neket-ràla has to be approached in the manner before described, and consulted as to a lucky hour. Were the goiya to meet with a milk cow, vessels filled with water, men dressed in white, &c., when he sets out towards his land, it is considered very propitious.

Assuming he has arrived at his land without the occurrence of any untoward event, the goiya begins to turn up the soil with his mamoty, this process being called *Geradenawa*. On the following day the goiya entertains such of his fellow-villagers with *keun* (rice cakes), *kiri-bat* (milk-rice), &c., as are willing to co-operate with him in the cultivation of his field. At the lucky hour, these villagers armed with mamoties proceed to the land, headed by the owner, and turning their faces in the direction of Adam's Peak give out the cry of "*Hà purà hodai*." (Ha! a good beginning.) At sun-turn (midday) the workmen retire for their midday meal. During the time the villagers help the goiya in the cultivation of his field, they are supplied by him with food and other necessities.

No particular ceremony is observed in ploughing, except that wreaths of sweet smelling flowers are twined round the horns of the buffaloes, and the ploughmen keep intoning the words "*wé wéwé wé wéwé*," which are considered pleasant and encouraging to the animals.

When the field is ready for sowing, the ceremony of *Pela mala Hadanawa* takes place after the following manner:—On the advent of a lucky hour, the goiya leaves his dwelling after having recited a number of religious stanzas, bearing an areca-nut flower and a pata (handful with the fingers stretched out) of paddy. Having arrived at his field, with his eyes turned towards the favourable region of the sky, he buries the paddy in a corner of a ridge, having first moulded the earth at the spot so as to represent a peculiarly shaped symbolic figure,

and lays the areca-nut flower on the top of the mound. On inquiring into the significance of this ceremony, Kēhelpanala Pohath Nàyaka Unnànsē, High Priest of Kotmalē Pansala, informed me that the areca-nut flowers were intended as an offering to the gods, who are held to have a great love for them, while the paddy is believed to be taken away to provide for a meal. After a lapse of five days all preparations are made to sow the field.

The time of ploughing is one of great solemnity to the Kandyan paddy cultivator. The *Neketrāla* is again consulted for the purpose of finding a nekata (lucky hour).

Exactly at the time appointed the goiya puts into a large earthen vessel of water the paddy that is to be sown. Having allowed the paddy to soak for a time, it is heaped on the cow-dunged floor in a pyramidal or conical shape. Dangomuva Bandar, Ratēmahatmayao¹ of the Badulla district, informed me that a peculiar preliminary ceremony was observed by the cultivators of that part in connection with the sowing of paddy. Images of Buddha in recumbent, sitting, and erect postures are brought with every mark of solemnity to the place where the paddy to be sown is stored, and certain religious performances are gone through by the officiating Kapurāla. Four days after the soaking referred to above, the ceremony of *yān karanawā* takes place, that is, the separating of the germinated seeds from the general mass. A part of the *pila* (verandah) or other convenient place is then rubbed over seven times with a thick solution of cow-dung, and the paddy is placed on this prepared floor and covered over with leaves of the *Habarala*, *Enduru* or *Maru*. The field is then got ready for sowing and the goiya proceeds to the astrologer to consult him as to a lucky hour and day for sowing. Very early in the morning on this day the cultivator anoints himself with sandal wood or other oil, and repairs to his field with the seed to be sown, the paddy being placed on plantain leaves and a mixture of cow-dung and water poured over it. The goiya, as he sows the paddy, repeats to himself certain religious stanzas and meditates on the *Hutarawaran Dewiyo*, the gods of the four regions of the globe. Every precaution is taken to prevent trespass of all kinds on the field, and the goiya fences in his land with stones or sticks. Much of the time of the cultivator is now necessary for watching his field. When the paddy is about a month old, weeding, *Wal Ederema*, is done. This part of the work is exclusively done by women, who are required to be thoroughly clean.

¹ A chief of a Kandyan district.

Thinning and planting, or *Neluma*, is done by the women when the paddy is about three months old. On a day which is not considered unlucky the women call upon the owner of the field for the *attankaiya* (this means return service), and the owner, according to recognized custom, treats the women to *keun* and *kiribat*, and directs them to commence work. The women, while transplanting, intone verses of poetry, making pleasant music. No one dare cross the ridges with an open umbrella while the women are at work, unless there be urgent need for so doing, and permission be first obtained, otherwise mud, &c., are thrown on the intruder whoever he be. The President (a judge of a village tribunal) of Uda Bulatgama mentioned to me that it is recorded of a certain king of Kandy, that while crossing the field known as Gurudeniya in Kundesalé Kandy, where some women were engaged in transplanting, he was bespattered with mud by them. The women proved themselves no respecters of person in the carrying out of their duty, while the king himself passed on without a word of censure against the treatment which no doubt he thought he deserved.

Paddy is liable to be attacked by a grub known among the Kandyans as *Kok-panuwoo*, which sucks the juices of the plant. To avert such attack a *Kema* or charm called *pas-pulutu-kema* is arranged for by the Kapuràla. Five kinds of grain seeds are fried in a pan and afterwards spread on some mud which is moulded over a cocoa-nut shell. About dusk, *gomman vena velàwa*, the Kapuràla after going through a process of purification, proceeds to the infested field with this preparation, carrying a lighted torch in his hand. The *Kema* is placed on a piece of wood, and the lighted torch is allowed to burn till the fire is extinguished. After this the Kapuràla returns home, but not by the same road he went to the field, and to nobody must he utter a word on the way.

Another method of dealing with this pest is to submerge the crop with water for a time. In some parts of the Kurunegala district an oleaginous mixture with a pleasant scent is smeared over areca-nut flowers by the Kapuràla, after reciting the *Ithipiso Gātha*, and suspended on sticks in different parts of the field. In the Anuradhapura district, sand, after being "charmed," is scattered over the field, and offerings are made to *Jyan* and *Abimāna Dewiyo*s with a view to inducing their intercession to stay the ravages of the pests. Mr. Bell, of the Ceylon Civil Service, in writing about the cultivation of hill paddy, describes another *Kema* called *nara nilla*, practised by the cultivators of the Sabaragamuwa district.

When the paddy is approaching maturity, other ceremonies are gone through, the *goiya*, after purification, places three ears

of grain on a leaf of the Bo-tree,¹ which is held in great veneration, for reasons too well known to need mention, and buries them in the *kalarita* or threshing floor, at the same time chanting some mystic words, invoking the gods to protect the crop from flood, fire, birds, and wild beasts. A day or so prior to the harvesting a few women are set to smear the threshing floor with cow dung. The crop must not be taken in on days on which *pōya* (the sabbath of the Buddhists), *Sangràhandi* (when the changes in the moon occur), and *Vitti* (inauspicious days) fall. Again the Nektarāla, attired in fantastic dress, describes a peculiarly-shaped figure with ashes on the *kalarita* with a view to preventing *huniyam* (sorcery) and other evil influences. This ceremony is known as *aluwanwadanawa*. Another rite of a peculiar nature follows this, known as *arkavalētiyanawa*. It consists of digging a circular hole in the field and placing inside a model of the sacred footprint of Buddha (Sripade), a husked cocoa-nut, a creeping plant, clusters of arecanuts, leaves from the *héraspalu* (*Vitis quadrangularis*), and *Tolabò* (*Crinum asiaticum*), and covering these with about three bundles of straw. The figures of the *pōru lella* (leveller), *lāhu* (measure), sun and moon, are also described with ashes in the *kalarita*. The village astrologer is also resorted to in order to ascertain a lucky day to reap the field. On such a day a number of men with their eyes directed towards Adam's Peak, and assuming a joyful mood, proceed to the field with their sickles, and verses are sung in turn by the reapers. Another ceremony which precedes threshing consists in three nursing mothers clad in white, having to go round the field seven times carrying paddy on their heads, and then suddenly coming to a standstill and retreating, without uttering a word, to the three corners of the *kalarita*. Then after giving utterance to some incantation, they drop their burdens on the ground, and this is the sign for threshing to begin.

One word more. Threshing is of course conducted by buffaloes yoked together. During this ceremony women are not permitted to intrude on the *kalarita* or threshing floor on any pretence whatever, as the Kandyan goiyas harbour an ill-defined notion of their impurity. But in Beligal Koale, in Kegalle District, and also in Seven Korries (Kurunegale District), women are not altogether subjected to this prohibition. When the ears of paddy are well trodden down by buffaloes so as to separate the paddy, it is winnowed in order to remove the dust and other

¹ This tree is held in the highest veneration by the Buddhists, in consequence of the fable that the day on which Buddha attained his sacred character, he went and seated himself in a certain place, when this tree instantly sprang up for the purpose of sheltering him. The tree at Aunuradhapare is the oldest historical tree in the world. Its botanical term is *Ficus Religiosa*.

refuse which are very often found along with paddy. If the threshing is likely to continue for more than a day, a rude watch hut called a *pèla* is constructed by the goiya, and a watcher is set as guard to prevent theft and ravages of wild beasts.

After winnowing, the paddy has to be measured. This process is termed *yāl karanawa*. It is noteworthy that because the Kandyan cultivator often happens to be illiterate, he resorts to a seemingly queer method of measuring the crop his field had produced. For this purpose a ripe areca-nut is taken, and when 40 lahas (1 amunam) are counted, a line is drawn on the areca-nut, and so on, as many lines as there are amunams. A *nilakàraya*, or tenant, when he goes to his landlord to tell him the quantity of paddy his field yielded, takes great precaution not to express the number in words, but to offer the areca-nut, which would clearly indicate the number.

The following is a list of the measures of paddy current among the Kandyans:—

4 Miṭas	= 1 Atalossa (a handful with the fingers slightly bent inwards).
8 Miṭas	= 1 Pata (a handful with the fingers stretched out).
2 Patas	= 1 Manàwa (two handfuls).
2 Manàwas	= 1 Neli (sheer).
4 Neli	= 1 Kuruni.
4 Lahas	= 1 Timba.
5 Kuruni	= 1 Bera.
10 Lahas ¹	= 1 Pèla (one bushel).
2 Beras	= 1 Pèla.
4 Pèlas	= 1 Amunu (6 bushels or $5\frac{3}{4}$ more correctly ; or 2 or $2\frac{1}{2}$ acres in English standard measurement).
6 Pèlas	= 1 Yel-amunu.
20 Amunams	= 1 Yàla (180 bushels).

The removal of paddy from and to the house is exclusively performed by women, who are required to go through a process of purification.

There are many receptacles of paddy, among which I shall mention the principal ones. Paddy is generally stored in an *atuwa*, or a barn or granary, which is the largest possible receptacle. It is made of wooden planks in the shape of a square, and set usually on stone pillars. The best site for the construction of an *atuwa* is in front of or in the middle of a house. The *atuwa* has an opening at the top which is reached by means of

¹ These differ according to size, some 7, others 8, while a few 9 lahas for a *pèla*.

a ladder. A *Bihī* is next in size and importance. This is a huge vessel conical in form, and constructed of sticks or split calamus (rattan). The largest sized one is capable of holding about a hundred amunams or 400 bushels.

A *pes* follows this. It is a large cylindrical vessel made of bamboo or rattan, and will contain about 10 amunams.

The other minor receptacle of paddy are of little importance and too well known to need mention. Certain incantations are uttered by the goiya in the act of storing paddy as a preventative against the attacks of moths and other injurious insects.

The goiya and the parties interested use peculiar technical terms during threshing, to name different agricultural implements, &c. These terms, though used from time immemorial, are never mentioned in ordinary language, and are not in keeping with native idioms and dialects. This mode of communication is called *Govi-bāsāra*, or the goiya's language. I was told by a well-informed Kandyan chief that the object of the goiya in adopting this course is in order to prevent the *Yakkhos* (devils) from stealing the paddy and consequent misfortunes.

The following are a few of the technical terms referred to, and I believe they will be of interest to the readers :—

1. <i>Gongahanana</i>	...	for driving the buffaloes.
2. <i>Yatura</i>	.. ..	" winnow.
3. <i>Goi Lella</i>	.. ..	" leveller.
4. <i>Lakawaliya</i>	.. ..	" sweeper. ;
5. <i>Bōgediyo</i>	.. ..	" buffaloes.
6. <i>Pubborurwoo</i>	.. ..	" rice.
7. <i>Rattā</i>	.. ..	" fire.
8. <i>Kotabānawā</i>	.. ..	" eating.
9. <i>Rattā Mahatkarapan</i>	.. ..	" to kindle a fire, &c.
10. <i>Pellai</i>	.. ..	" bags.
11. <i>Kola Madinawa</i>	.. ..	" threshing.
12. <i>Beta</i>	.. ..	" paddy.
13. <i>Medurvan</i>	.. ..	" straw.
14. <i>Deṭṭa</i>	.. ..	" flail.
15. <i>Kalavita</i>	.. ..	" threshing floor.
16. <i>Gagulā bānawa</i>	.. ..	" rain.
17. <i>Gon pas</i>	.. ..	" dung of the buffaloes.
18. <i>Galutanawā</i>	.. ..	" yoking.
19. <i>Katumonatta</i>	.. ..	" chaff.
20.		

Before taking paddy for household consumption, a portion is first reserved called *Akkiyāla* as *Dehiyangē Pangura* or god's share. This is given in the name of the god to the Kapurāla,¹

¹ Devil priest.

who is supposed to have officiated throughout. Another portion called *Alut Bat Dâne*, is sent cooked to the neighbouring *Pansala* (Buddhist monastery) for the priests.

A quantity of paddy is then put into the mortar and three women clad in white with three pestles in their hands pound the paddy at an auspicious hour. A grand feast is next given to relations, at which all the guests including the goiya and his family make merry, afterwards dispersing with every good wish for the coming harvest.

Sir HUGH Low said: The interesting paper which has just been read to us applies principally to the wet padi cultivation, and it is interesting to note the general resemblance of customs connected with this important cultivation in countries so far distant as the Malay Peninsula and Borneo from Ceylon itself. I do not propose to go at any length into these practices, but I may remark that as both Borneo and Ceylon have in ancient times been much under the influence of Hindoo civilisation, it is not surprising that these customs should have some considerable similarity though attended by very great differences. My principal object in rising is to ask your attention to a few remarks in connection with the reverence which I have seen paid by the Dyak races in Borneo to a *Liliaceous* plant of the genus *Pancratium* in association with the seed padi. This plant has a bulbous Amaryllis-like stem with three or four rounded cordate leaves on petioles about 6 inches long, from amongst which springs a flower stem bearing a crown of beautifully white and fragrant flowers, rising to a height of about a foot above the ground. The plant is, I believe, known botanically as *Pancratium Amboinense*, or *Eurycles Coronata*. By the land-Dyaks it is called Sikudip, and by the Si Buyoh sea-Dyak it is named Si Kenyang, and it is believed to have been given by Tappa, their Chief Spirit, to the Dyaks with the padi seed with instructions that it should be taken great care of, as the Spirit of the Padi (its "semangat," as Dr. Tylor kindly reminds me) could not survive without its presence. It is planted with the grain and taken up when the harvest is gathered in—the root being preserved amongst the seed padi until the next planting season arrives. On the only occasion on which I saw the plant in flower an altar of the ivory bamboo was erected over it on which were offerings of rice, other kinds of food and water. I have never observed more than one or two roots in a padi field, and these are generally planted near the hut occupied by the family of the owner. The plant is not known as a native of Borneo, but from its specific name I imagine that it is a native of the more Eastern Molucca Islands, which may indicate that padi cultivation among the Dyaks was originally introduced from that direction, from which the original immigration of the race may also have taken place. It would, however, be interesting to ascertain whether the plant is held in similar veneration in Java, Ceylon or India.

The LEX BARBARORUM of the DAGHESTAN.

By Professor MAXIME KOVALEVSKY.

I AM sure to be approved by those who have made a special study of the so-called customary law, if I say that the chief difficulty of their investigations lies in the total want of chronology as soon as one enters the bright field of folk-lore. It is all very well to repeat after Puchta and so many other German legists that the origin of custom lies in the very soul of the people, that for this reason alone it is older than the oldest of written laws. The moment comes when bondage to theory must ply to evidence; and such an evidence has been recently brought forward by the almost complete edition of the sacred books of the East, by which the English and more particularly the Oxford scholars have acquired a new right to the gratitude of historians, lawyers and folk-lorists all over the world. From the moment when learned Orientalists under the guidance of Professor Max Müller have revealed to the larger public the religious, moral and legal ideas of our remote ancestors no special study of the customs and usages of some definite people or tribe can be tried without a look to this common treasure of old knowledge and old prejudice. On Caucasian folk-lore, of which I have made a particular branch of my investigations, the sacred books of the East have thrown a quite unexpected light. They revealed the fact that many a usage which has already lost its meaning even in the eyes of those who follow it, had its origin in the religious, moral and legal ideas summarised by the compilers of the Avesta.

The people among whom the usage still lives (I mean the Chevsurs, Pschavs and Touchins) have little or nothing in common with the old Iranians; they belong to the Cartvelian race, they speak a dialect of the Georgian, but their remote ancestors have been placed centuries ago under the military command and the cultivating influence of the Sassanides. And this accounts for the fact why survivals of Iranian ideas about purity and impurity still live among these highlanders, who, during ten months in the year, are prevented from any communication with the outer world and stick to their old creeds and practices with quite a religious fanaticism.

Applying the same method of investigation, I mean the comparative one, we come to the rather astonishing conclusion that Greek and Roman, as well as Persian and Georgian cultures, have left their traces in the Caucasian folk-lore. The rules and sentences attributed to old customs are very often but an adulterated reproduction of some ancient law. Religious and

legal codes, such as the Bible and specially the Decalogue or the Digest, of which an Armenian monk, Mechitar Gosch, has introduced a good part in his private compilation, have contributed to a large extent to the evolution of Caucasian custom. Thus contrary to current opinion, custom is not always the source of written law. Sometimes it is the reverse; to account for the origin of custom we have to make a large appeal to ancient legislations.

This conclusion, which for the majority of European nations presents but a theoretical interest, in the vast Empire of the Tzar is not deprived of practical importance.

In our extension to the south-east we come in conflict with Mahommedan civilisations, powerful enough to keep us in check during several decenniums. Saying this I have more particularly in view our dearly acquired successes in Daghestan, where the capture of Schamil was as you know followed by a complete pacification of the country under our rule. The first administrators of this province—men of the sword, not of knowledge—attributing the animosity we inspired to the influence of the Mahommedan religious and civil law, the so-called schariat, thought it wise to prohibit its application in the courts. Accordingly they appealed to local custom. Private arbitration remained the general rule, and elected judges, under the supervision of a Russian official, were entitled to pronounce in civil and criminal causes according to the dictum of old and well-accredited men; the authority of the legal doctor Navavi whose code, the Minhadj al Talibin, the same still in use in Java, belongs to the small number of juridical treaties left by the school of Schafai, was to be recognised no more. Now this was, on the part of the government, a voluntary return to old barbarism. The customs of the Daghestan are those of a people who still admit the vengeance of blood, and make the remotest relation of the murderer or some other trespasser responsible for his deed. It contains among other rules this astonishing one; a husband who murders the adulterer on the spot side by side with the wife, is free from punishment or private vengeance: but if one of the two victims survives, the criminal responsibility of the trespasser begins.

This way of proceeding, this systematical hostility to written law and high appreciation of custom had at least one happy result. It induced the search for old collections of local customs and usages. It was supposed that the rulers of the Avars, still inhabiting the high plateau of the Daghestan, had proceeded to a sort of codification of these old customs.

During a long time all researches were fruitless. At last a code was discovered. It belongs to the Tartars of the Kaitag, a

province placed at a small distance from the Caspian Sea, not far away from the once Persian town Derbent. This code is known to the people under the name of the Code of Roustem-Khan. Now who was this Roustem, and when did he live ?

Some years ago I had the occasion to study the accounts which the Dutch traveller Olearius left of his journey to Daghestan and Persia. There I found the only mention we have of Roustem judge or "outzmi" of the Kaitag. Olearius applied to him, in the name of the Shah of Persia, as to one of the at least nominal vassals of this empire. The Dutch traveller visited the country in the second quarter of the seventeenth century. To the same period belong the two letters of the Persian rulers, Abbas and Safva, directed to the same Roustem; the first is dated 1609-10, the second 1619. In these letters Persian merchants are placed under the protection of the outzmi. The Shah makes him responsible for the preservation of peace on the land placed under his rule. This land, called the Kaitag, lies on the way from the Persian town Derbent (on the shore of the Caspian) to the dominions of the Schamchal of Tarki, another vassal king, whose power on the native tribes, had been established, according to the French travellers such as Chardin and Tavernier, under the pressure of Persia. The Code of Roustem, a Russian version of which is preserved in the official records of Derbent, is not the personal work of this celebrated ruler and judge, but a later compilation, dedicated to his memory. The precise title runs as follows:—"A code of the customs or adats of the Kaitag, made in memory of the outzmi or judge Roustem-Khan."

Although the Code of Roustem is but of a relative antiquity, it is unique in its way, not only in this sense that we have no earlier compilations of Daghestan usages, but also because of the antiquity of legal customs mentioned by it.

Let me call your attention but to this fact; all payments prescribed by the code are to be effected not in money but in kind. The chief merchandise of the country consisting of very ordinary linen, known under the name of chabzaldick, the code prescribes to the misdoer to pay to the grieved party as well as to the judge a fixed number of kari, something like a metre of this linen.

Amercements are not inflicted for all kinds of trespasses. Vengeance and private forcible entry are admitted as a rule in all cases of criminal or civil offences. Consanguinity to the remotest degree makes a person jointly responsible. The Roman "gens" survives in the touchoum of the Daghestan. Whole villages are occupied by families pretending to descend from some supposed and mythical ancestor. Each of the members

of the touchoum is bound to prosecute the trespasser and to revenge the misdeed on him or his relations. A legal saying inscribed in the code and still repeated by the people says: "blood must be washed with blood." This means that in case of murder or wounding, not only the trespasser but each one of the members of his touchoum or gens has to expect vengeance on the part of the touchoum, to which the victim belonged. The same mutual responsibility exists in the case of forcible entry. The last is known under the name of "schikil" and is still used in the Kaitag. Any appropriation of things belonging to a foreign touchoum empowers all the members of the last to a forcible entry on the goods and chattels of each of the parents and relations of the offender.

Stating this the law-giver only confirms the existing practice. But his intentions have a wider and nobler end. He is ambitious for nothing less than the extinction of private vengeance and private forcible entry. He accordingly prescribes the transfer of the trespasser to some remote village and orders it to give him hospitality. He also establishes the way in which an accommodation can be arrived at between the party of the victim and that of the offender. It is the same way which is followed in our own days all over the Daghestan. According to general usage the last offender appears unarmed and with an uncovered head before the tribe of the offended. The next relation, the brother or the son, of the victim receives him with kindness and places his hand on his head in sign of peace and pardon. Mediators establish the amount of the composition or wehrgeld by which the feud is to be brought to an end.

As to forcible entry, without abolishing it entirely, the Code of Roustem tries to limit the sphere of its action; no recourse to it is allowed unless the creditor acts publicly. Who attacks the property of the debtor in some deserted place is condemned to repay ten times the amount of his appropriation.

Certain persons, judges, officials, old men in general, are declared free from any forcible entry. This is also the case of those who have declared their desire to break with their own gens or touchoum. This desire must be expressed in a solemn way still in use among the inhabitants of the Daghestan. Who wishes to be delivered from all joint responsibility has to make his desire known to his neighbours and tribesmen. At some meeting in the mosque he declares openly that every tie is broken with the touchoum, to which he did belong. In commemoration of this a nail is solemnly placed in one of the walls of the temple.

As to the other modifications of the principle: eye for eye, tooth for tooth, they all proceed from the teaching of Mussulman lawyers, and may be cited as an evidence of the early

influence exercised by the shariat on the customary law or the adat of Daghestan. Let me say a few words more as to the legal position occupied by the law-giver himself, the outzmi or judge. It is that of a private arbitrator, who by and by became a judge and military commander of his people.

It has something in common with that of the judges of Israel and the Brehons of old Erin. A feature common to the outzmi and the Brehon is that both keep their legal learning for themselves. You know what Maine has said on this subject. His critic, M. D'Arbois de Jubainville, has not contradicted him on this point; quite the contrary, he has more plainly stated the fact, that sentences pronounced by the Brehon and serving as precedents in case of new disputes, were communicated by the way of teaching only to his direct pupils. The same was the case with the outzmi of the Kaitag.

The code we try to analyse inflicts a high amercement on those who make use of it without the permission of the outzmi. A sentence placed at the head of the different articles is: "who keeps his mouth will not lose his head." No commentary is wanted. The words reported plainly state the obligation to keep secret the different rules which the treaty contains. The outzmi was not the absolute ruler of his subjects; in the times of Roustem he was only a judge bound to the exercise of his duties. One of the legal prescriptions of the code mentions the case if the outzmi should refuse to accommodate the parties. Such a judge according to law ought to be deposed. The outzmi does not pronounce the sentence by himself. He is surrounded by old men, who form a sort of council, and give their opinion as well on administrative matters, such as peace or war, as on legal.

The code admits private vengeance even towards the outzmi. At the same time it entitles him to receive the wehrgeld of those who have no family or gens. Such is more particularly the case of strangers and of Jews. "Who murders a Jew has to pay to the outzmi the weight of the dead body in silver."

MAY 14TH, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The presents that had been received were announced and thanks voted to the respective donors.

The following papers were read:—

“Pygmies in Europe.” By Prof. J. KOLLMANN.

“The Hastings Kitchen Middens.” By W. J. LEWIS ABBOTT, Esq., F.G.S.

“Notes on a Remarkable Barrow at Sevenoaks.” By W. J. LEWIS ABBOTT, Esq.

“Notes on some Specialized and Diminutive Forms of Flint Implements from Hastings Kitchen Midden and Sevenoaks.” By W. J. LEWIS ABBOTT, Esq.

“The Rock Paintings and Carvings of the Australian Aborigines.” By R. H. MATHEWS, Esq.

PYGMIES *in* EUROPE.

By Professor J. KOLLMANN, M.D., D.Sc. (Dubl.).

NEAR Schaffhausen, in Switzerland, a settlement has been found which was inhabited during three pre-historic periods, viz., the palæolithic, the neolithic, and the metallic. The different periods were distinctly separated from one another by each stratum being differently coloured. The palæolithic stratum contained a large amount of broken bones, mostly of the reindeer, and, in lesser numbers, those of the horse, the arctic fox, the bear, and other animals, but no bones of human beings, only worked flakes.

This stratum was covered by a great layer of breccia, 80 cm. in thickness, containing angular fragments of the calcareous rocks close by. As this layer contained no trace of human industry, from which it may be inferred that a long period—numbers of centuries—probably intervened, before another human race again settled at Schweizersbild.

The next stratum contained articles characteristic of the so-called neolithic period in the history of mankind. The art of making pottery and of cooking, had by this time been introduced, as is proved by potsherds being found on the settlement, as well as a great quantity of ashes, which gave a grey tinge to the stratum. The animals which supplied the food of these new human beings were also different from the species of former times. The reindeer existed no longer in this latitude, but, instead of it, we find the stag, the roe, the black bear, the moor-ox, and other animals. This neolithic stratum has an average thickness of 40 cm. It is finally covered by a

layer of humus 40–50 cm. thick. During the formation of this last stratum, man had ceased to settle for any length of time under the shelter of the over-hanging rocks, here placed in a semicircle, for protection against northerly and north-easterly winds. The implements found in this stratum were few in number and of an inferior kind, therefore the so-called metallic period need not be further alluded to. Very different is the importance of the neolithic period. In the stratum formed during this time many human beings were buried, adults as well as children. Dr. Nüesch (from the College of Schaffhausen), who discovered and explored the settlement with the utmost care, found more than twenty interments in this stratum.

After due examination of the remains, I find among those interred eleven children, from the new-born up to the age of seven years. Some of them were buried with particular care, having been surrounded with stones, and still wearing a serpula necklace. Among the adults were found:

(1) Skeletal remains of normal-sized persons of the usual European type, such as represents the actual population down to the present day. Fig. 1.

(2) Portions of skeletons of small human beings, which, considering all accounts we possess about pygmies of other continents, must be regarded as pygmies of the neolithic period of Europe Fig. 1.



FIG. 1. FEMUR OF A TALL MAN AND OF A PYGMY FROM SCHWEIZERSBILD.

The remains of these two very different types were found lying side by side in the neolithic stratum, and showed no perceptible difference in the manner of their burial. From this we may conclude that the people lived together in peaceful harmony, notwithstanding their great difference of race.

The remains of four full-grown pygmies were anatomically evident; probably there was another of these little individuals

buried in tomb No. 9, but the proofs are not sufficiently clear to make us fully sure of the fact.

The stature was ascertained according to the methods indicated by Manouvrier and Rollett, from the length of the femur. Though the results of both these methods are somewhat uncertain in consequence of variations arising from individuality, sex, and race differences, which may amount to as much as 70 mm., still they enable us to prove to a certainty the diminutive size of these pygmies in comparison with full-sized races. Measured according to Manouvrier's method, I get the following results:—

Stature of No. 2	...	1,416 mm.
" " " 12	...	1,355 mm.
" " " 14	...	1,500 mm.

According to Messrs. Sarasin, the medium stature of the Veddas of Ceylon is 1,575 mm., while the average stature of the three European pygmies is 1,424 mm., so that they are shorter even than the Veddas by 100 to 150 mm., or more.

Although these results of the comparison of measurements exclude every possibility of error, we had still another opportunity of proving the existence of pygmies at Schweizersbild. M. Mantegazza very kindly granted me permission to examine the skeleton of an Andaman islander in the Anthropological Museum of Florence, the Andamanese being one of the varieties of pygmies. M. Regalia kindly assisted me in the measurements. The femoral length of this skeleton is 424 mm. The femoral length of Schweizersbild skeletons is as follows:—

No. 2	...	369 mm.
" 12	...	355 "
" 14	...	393 "

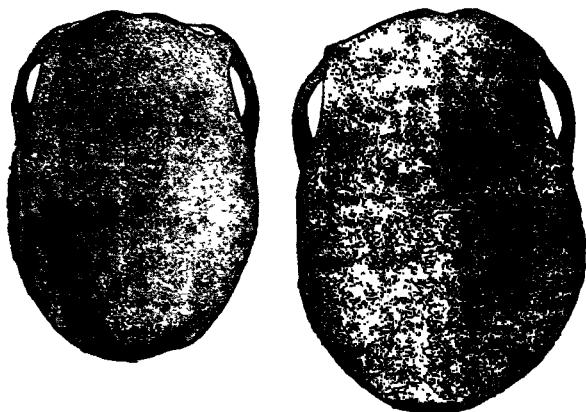


FIG. 2. NORMA VERTICALIS; SKULL OF A PYGMY OF SICILY AND OF A TALL MAN OF EUROPE.

The stature of the Andaman is 1,500 mm. If therefore this Andaman islander, with a femoral length of more than 400 mm. has a stature of only 1,500 mm., the pygmies, with a femoral length of less than 400 mm., must surely have been of very low stature.

Flower has had an opportunity of examining twenty-nine skeletons of the natives of the Andaman Islands. The average length of the femur is from 398·7 to 393·4, in the males, and, in the females, from 378 to 380·4. The average height of the males, calculated from twenty-five femora, is 1·431, or 4 feet 8·3 inches. In the case of the females, the height is 1·383, or 4 feet 6·4 inches. From these figures of the femur length it may be seen that my estimate of the height of the European pygmies of the neolithic period is not understated, but most liberally calculated.

	Tall race.	Pygmy race, Sicily.	Indices.	Tall race.	Pygmy race, Sicily.
Capacity	1460	1031	Cephalic index ..	73·3	73·5
Length	191	162	Height, length, index	78·3	80·2
Breadth	141	119	Breadth, height, index	100	91·0
Height	150	130	Face index ..	61·9	72·5
Frontal width ..	104	88	Mid-face index ..	42·3	44·4
Circumference ..	533	468	Orbital index ..	77·5	83·7
Frontal arc ..	138	113	Nasal index ..	51·0	60·2
Parietal arc ..	122	130	Palatal index ..	82·7	118·4
Occipital arc ..	118	104			
Total	378	347			
Facial length ..	88	87			
Maxillary height ..	60	53			
Bi-zygomatic width ..	142	120			
Orbital width ..	40	37			
Orbital height ..	31	31			
Nasal height ..	49	41			
Nasal width ..	26	25			
Palatal length ..	52	38			
Palatal width ..	43	45			
Basal length ..	110	81			
Occipital length ..	81	51			

The tables contain the measurements of the skull of an average European, and those of the skull of a Sicilian pygmy for the use of which I have to thank Professor Sergi (Fig. 2 and Fig. 3). The difference is remarkable between the absolute figures, thus the large skull has a capacity (Broca) of 1460 cc., the pygmy skull only 1031 cc., the former is 191 mm. long, the latter only 142 mm. For further details I would refer to my paper which has appeared in the "Zeitschrift für Ethnologie" (Berlin) 1894.

As to the remains of adult males of the taller race found in seven of the tombs, I found the length of a femur from tomb No. 5 to measure 454 mm., which gives a stature of 1,662 mm., the normal stature of the taller European races. I found portions of several other skeletons from the neolithic stratum referable to some more individuals of the taller race, but was unable to take satisfactory measurements of them, owing to their imperfect state.

The results of this examination prove that pygmies have lived at one time at Schweizersbild. They must not be considered as pathologically degenerated people, since Professor R. Virchow states expressly that their bones are of normal structure. Consequently we find here a miniature type of man with distinct anatomical characters, which differs as much from the taller size varieties of mankind, as do the pygmies of Africa, Asia, and the Asiatic Archipelago.

The discovery at Schweizersbild of the contemporary existence of pygmies and normal sized types during the neolithic period being unique, would certainly have been looked upon with some incredulity. But while I was engaged upon the examination of the settlement, Sergi, assisted by Dr. Mantia, discovered some living pygmies in Sicily and Sardinia. Sergi has also a fine collection of skulls of these pygmies, in which the cranial capacity is 400–500 cc. lower than that of the taller European races. The pygmies in Sicily are of very small stature, being generally under 1,500 mm. Small people are not only met with in Sicily and Sardinia, where, in several districts, they form 14 per cent. of the population, but all throughout Italy, according to Sergi, who quotes from the enlistments for the army. He believes them to exist also in Russia, as he found some very small skulls in the craniological collections there, similar to those from Sicily.



FIG. 3. NORMA FRONTALIS OF THE SAME SKULLS AS IN FIG. 2.

As regards the appearance of these living pygmies in Sicily, they seem to have the looks of miniature Europeans. For further particulars, I refer to M. Sergi's memoirs on the subject. As for myself, the point I particularly wish to impress is that to the normally tall varieties of man in Europe must be added smaller types which have their own special place in the anthropological system. These latter are not simply diminutive examples of the tall races, but represent a distinct species of mankind, which is found in several localities dispersed over the globe. We are led to believe that these smaller varieties have been the predecessors of the now predominant types of full-sized humanity. To prove this argument to its full extent is the task of anatomical science, and I beg to direct the special attention of anatomists to these diminutive individuals wherever an opportunity may occur of examining any of them.

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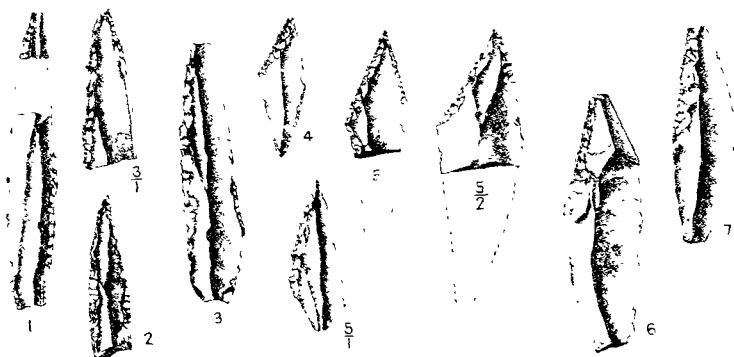
The HASTINGS KITCHEN MIDDENS. By W. J. LEWIS ABBOTT,
F.G.S.

[WITH PLATES X, XI.]

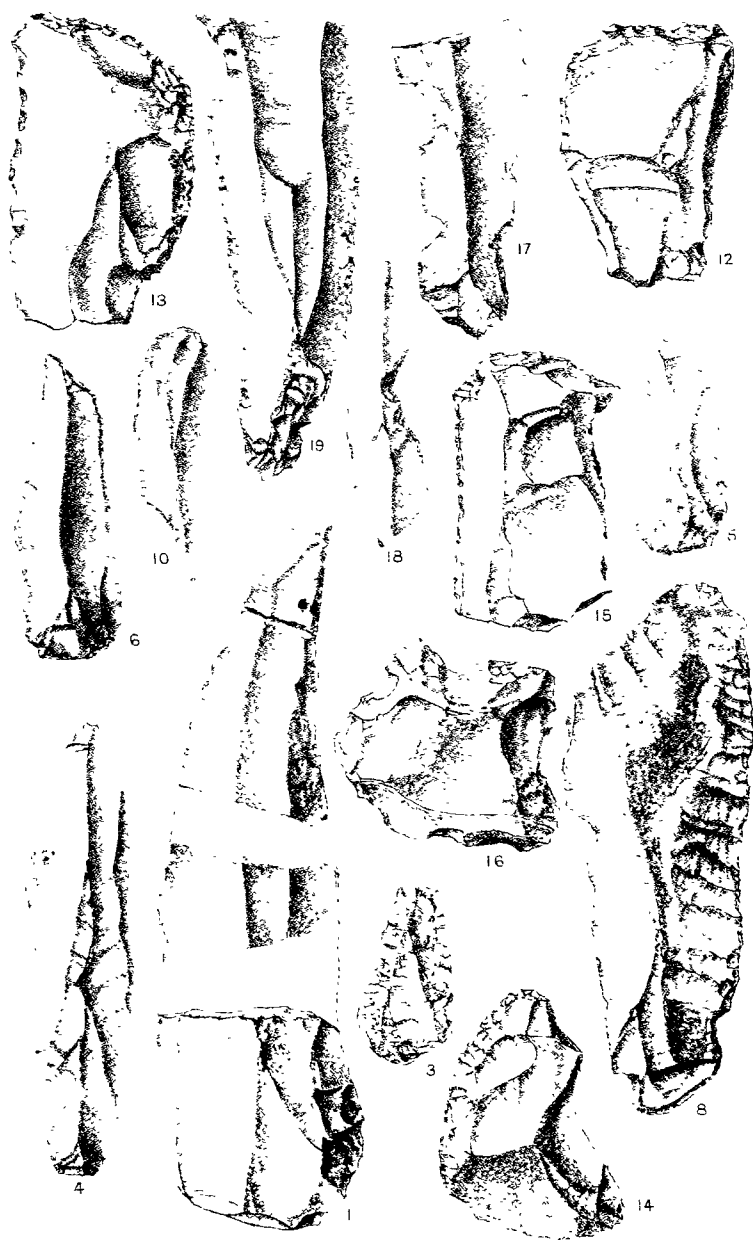
As one stands upon the high ground to the north of Fairlight Glen and contemplates the outstretched panorama, what a remarkable record of battles lies stretched out before him. Now



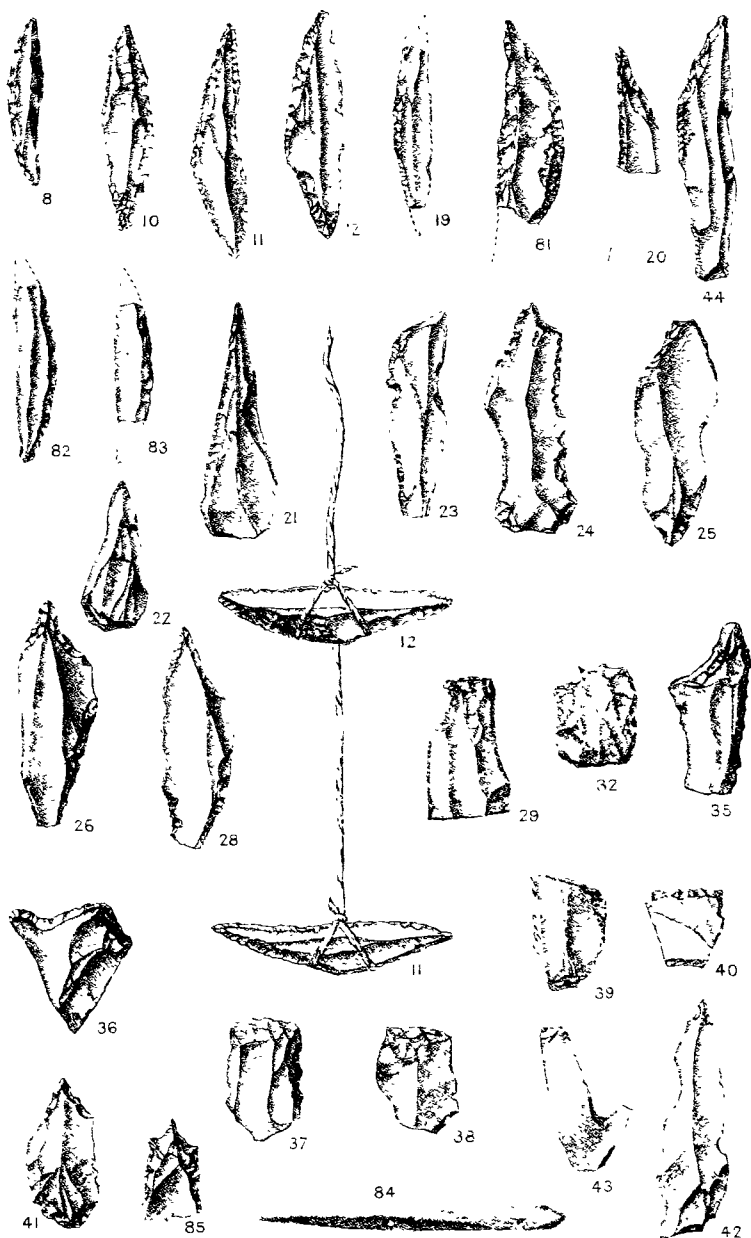
IMPLEMENTS FROM THE HASTINGS KITCHEN MIDDENS.



DIMINUTIVE IMPLEMENTS FROM HASTINGS AND SEVENOAKS.
(NATURAL SIZE)



IMPLEMENTS FROM THE WILDERNESS BARROW.
(NATURAL SIZE.)



DIMINUTIVE IMPLEMENTS FROM HASTINGS AND SEVENOAKS.
NATURAL SIZE



IMPLEMENTS FROM THE WILDERNESS BARROW



IMPLEMENTS FROM THE HASTINGS KITCHEN MIDDENS.
(NATURAL SIZE)

this stream has been victorious, and now the next; now a further impetus was given to the third, and it conquered for a while the other two. Thus have the bloodless battles raged in the past, the history of which is written in the physical features of the district. If we approach the streams from the channel, we soon perceive from the height at which the old river channels now meet the coast line, that in the days of these old fluvial contentions, the mainland extended far away out into what is now the English Channel, and that since these times the land over which the old streams flowed has been destroyed without leaving a trace behind. There is, however, no reason why the upper reaches of these rivers should not yield a good harvest to the diligent investigator, despite the fact that scarcely anything has been recorded from them.¹

The commanding positions of these well-watered areas must have made them very desirable situations for early man, especially when we remember their proximity to the sea.

There has probably been comparatively little alteration in the coast line here since late neolithic and bronze times, and the fissured rocks and rock ledges, then, as now, must have offered tempting habitations for those who lived either by their hunting and fishing, or even for the more civilised domesticators of cattle.

For the last four years I have been paying special attention to the fissures of the Wealden area, and, as is known to many fellows of this Institute, those in the north Weald have yielded a unique fauna. These fissures exist all over the area from the North Downs to within a few yards of the coast, and probably extended over the lost area. Sometimes they are mere cracks, at others they open out some 20 or 30 feet wide, or form trough faults between which the intervening rocks become keyed, and form veritable caves, large enough for habitation. Scores of these are exposed along the cliffs at Hastings, yet so far as I am aware no one has investigated them. Even the magnificent and unparallelable "St. Clement's Caves," which probably originated in this manner, being enlarged and connected by ambidextrous stone-age man, and subsequently more so by right-handed iron-age man, are allowed to be labelled with a smuggler's legend.

The part to which I chiefly confined my operations was Castle Hill, although I obtained implements, bones and shells for a distance of considerably over a mile. This hill is 178 above O.D., and is bounded on the east and west by one of the old valleys previously referred to. It is made up of Ashdown beds: they are somewhat friable sandstones, yellowish-white in

¹ Several re-worked palæolithic flakes were found in the Middens.

colour, thickly bedded with occasional partings of crushed (brecciated) clay and clay iron-stone. When the sandstones crop out on the foreshore, they are often very hard, and contain a large quantity of iron. They are very much fissured, sometimes every 20 or 30 feet. There is a clay with brecciated sandstone and ironstone shown at the top of the cliff, very similar to the intercalated beds, and above this there is a surface wash, or a deposit of blown sand 2 to 3 feet thick. This surface material fills the tops of most of the fissures shown. The strike of the main fissure is approximately south-west by north-east. My excavations were at first principally confined to this fissure; it is from 3 to 6 feet wide, and runs somewhat parallel with the cliff face, the upper portion is some 30 feet above a high ledge about 50 yards wide, which, at a height of from 80 to 100 feet, exists at this place. Upon the majority of wide ledges—whether formed by the weathering of the rocks, or the filled-in tops of the fissures—the midden material exists in large quantities. After removing about a foot of blown sand, &c., the middens are reached; probably about nine-tenths of the material is dirt, the rest relics of man's occupation, which therefore occur in bushels. They embraced the whole paraphernalia of the life of the period, and consisted chiefly of shells of molluscs, bones of animals, birds, and fish, stone and bone implements and pottery.

Vertebrates of the Middens:—Of the bones, the principal species represented is perhaps the small ox (*bos longifrons*?) and wild boar (*sus scrofa*); these latter occur in all sizes. All the limb bones of all species are split up for their marrow, and in two cases, I found a flint wedge still *in situ* in a cracked bone. The next most plentiful bones were those of sheep or goat. The rest of the vertebrates are represented by a few bones only. The roe, the fox, and the badger being represented each by a single bone.

Birds:—Up to the present at least, three forms of birds have been identified, one, a duck of some kind, the black grouse, and a third, closely allied, if not identical with, red grouse.

Amphibia:—There were several bones of the frog or toad; but whether the modern French relish was used as food or not we have no evidence.

Fish:—The number of fish bones was fairly large, and of these a half-dozen species have been identified; the cod being the most plentiful.

The whole of these bones have been worked out by Mr. E. T. Newton, F.R.S., with whom I have for so long had the honour of working.

A large number of the bones are incised, and show the marks

of the flint tools in the cutting up of the animal ; one or two have been worked into tools.

The Mollusca :—Of the mollusca *littorina littorea* (Linn.), was the most common, these are all of large size, and well preserved ; although not so well as in some of the Red Crag Beds.

Next in numbers came the *Patella vulgata* (Linn.), of which there were several varieties.

Next came *Ostrea edulis* (Linn.) of small and medium sizes, none were “ natives,” and none the large variety now found in the deep waters of the channel.

Cardium echinatum was fairly plentiful, but *C. edule* absent.

Buccinum undatum (Linn.) was well represented by several varieties ; but *trophon* was absent.

There were also a few specimens of *Purpura lapillus* (Linn.). It would be interesting to know if these old fellows ate this species, or if they knew of its purple juice. It might have been taken up by accident in mistake for *Littorina littorea*.

Mytilus edulis (Linn.) was also fairly represented, and in another part occurred in great numbers.

Single specimens were also found of *Natica catina*, *Mactra*, and *Pholas crispata*.

Pottery :—Fragments of pottery were fairly plentiful, mostly small, but in some cases about a quarter of a vessel was found ; while in other cases the pieces were large enough to identify the shape of the vessel. They were all domestic, large-bottomed utensils, all was coarse thumb-made, generally well-baked ware, usually black, but sometimes dark brick red.

Many of the pots and potsherds were incrustated with burnt carbon indicative of having been used upon a fire. Very few pieces showed any decoration.

Fire :—There were fragments of old hearths, or burnt earth. In one instance about 2 feet in diameter, and a number of bones, including horse, were burned as if in roasting, and charcoal was fairly plentiful in this deposit.

List of species recovered from the Kitchen Middens :—

MOLLUSCA.		VERTEBRATA.
<i>Ostrea Edulis</i>	(Linn.)	Gurnard.
<i>Mytilus</i> "	"	Mackerel.
<i>Cardium Echinatum</i>	"	Turbot.
<i>Mactra</i> (sp)	"	Plaice.
<i>Pholas Crispata</i>	"	Whiting.
<i>Buccinum undatum</i>	"	Cod.
<i>Purpura lapillus</i>	"	Toad or Frog.
<i>Littorina littorea</i>	"	
<i>Patella Vulgata</i>	"	Black Grouse.
<i>Natica Catena</i>	(Da C.).	Red "

Duck of some kind.	Badger.
Rabbit.	Dog.
Horse.	Wolf.
Roe deer.	Fox.
Sheep or goat.	Man (implements and
Ox.	pottery, &c.)
Pig.	

Implements:—It is, however, the implements found in the midden, that will probably be considered the most interesting. These may be roughly divided into three groups. First, a minor group of the ordinary neolithic forms such as are found practically all over the country. Secondly, a large group containing forms identical both in general appearance and detail of secondary work with those found in the French caves; and thirdly, a group of highly-specialized forms, which are often identical with some of those described before this Institute by Mr. Allen Brown, as occurring in India, Arabia, South of Spain, and South of France.

Crude material, flake implements:—In several positions I found small heaps of pebbles, the latter being from $2\frac{1}{2}$ inches to 4 inches in diameter, brought up from the beach; these were treated in two distinct manners; in one they were “quartered” into irregular large flakes, from which were fabricated various more or less leaf-shaped implements, of the more ordinary neolithic forms. In the other the flint was worked to a core from which were struck the flake implements, which form so marked a feature in the general facies. One of the first facts that forces itself upon one is, that the majority of the ordinary operations of daily life in these times must have been performed by simple flakes; they were, in fact, the knife and fork of every-day life. So varied do these become in consequence of the multiplicity of operations for which they were employed, that it would require a monograph to describe them. It appears as if the cutting was usually effected by a scraping action, that is, with the arm moving *towards* or *from* the body, rather than by a sawing motion. Usually the wear is from the flake face, but sometimes it is from the ridge face. Frequently these are reversed, showing that first one side was employed, and then the other; in yet other cases the hand-grip was reversed, the two edges and ends being alternately used. Although most of these owe their present outline to the original shape of the flake modified by use, there are yet scores of others of peculiar forms which are obviously due to design, although it would be extremely difficult—or indeed impossible—to say to what special use such forms could have

been put. But in this case, as with the plateau forms, our inability to assign to them their original uses in no way invalidates their claim to human origin. Disregarding the mere irregular-shaped spalls resulting from working cores into shape for flaking, the flakes are extremely good. They have invariably a flake face, usually incurved from bulb to point, and a ridge-face, generally consisting of several facets, Plate X; these are most often three in number, parallel, and of great regularity, at times almost recalling to mind the beautiful obsidian working of the Mexicans. In by far the greater number there is a tendency for the sides to approach, thus producing a tapering point; the latter often turning to either the right or the left. Such flake implements were used for a multiplicity of purposes, for which they were sometimes prepared by secondary working. In a very large group we find the butts well shaped by minor or secondary working, to oval, rounded, or nearly square, as in Nos. 4, 5, 6, and 7, Plate XI. Now as this working of the butt often consists in the removal of from six to ten small flakes, which in many cases had been detached by blows administered beyond the present periphery of the butt, I was interested to find whether this was done before or after the flake was dislodged from the core. Moreover as I found many cases where a most excellent butt had been worked, and then the flake face run off short or obviously gone in the undesired direction (as they will when the blow is not administered correctly), I came to the conclusion that the butt was worked off the projecting ridges of the core, before the last blow was administered, which dislodged the implement from the nucleus, complete and ready for use. For nearly three years I carefully examined every core I found, in the hopes of being able to prove this to have been the *modus operandi* of manufacture; ultimately I found one which I think settles this question. This shows the implement ready to be dislodged by the next dextrous blow, and also the shape into which the block was brought in the process of fabricating the implement. Implements of this form varied in size from about 4 inches down to about a $\frac{1}{4}$ inch in length, and were probably used for small spear heads and arrow tips, and considering the nearness of the sea, and the large number of fish bones in the middens, and the proximity of other situations in which I have found them to water, I am inclined to think that many of them were used as fish-hooks. With our refinements of the modern age of steel, we might not at first be inclined to realise the probability of this, but when we call to mind the clumsy things still used in many parts of the globe for this purpose, we realize that some of the midden fish-hooks were

of almost Waltonian dimensions. No. 56, Plate X, suggests a method of fastening these hooks. By far the greater number of these were broken, and as the broken surface and the rest of the implements generally show the same degree of patination it is more than probable that these were broken in the chase or in fishing, and when the old fellows returned home, they replaced the broken implement by a new one, and threw the old piece upon the refuse heap. This will also account for the existence of so many more butts than tips in the midden. No. 7, Plate XI, shows a small series of these. Although the majority of these flake implements have bulb-butts, there is another series in which the bulb formed the point, some of which must have been extremely difficult to make, as although the point is sometimes touched up with secondary working, at others it is just as it was struck off, and yet is capable of perforating. See No. 10, Plate XI. When the last blow did not close up the side of the flake to a point, it resulted in a parallel-sided implement; this was probably used for a knife, which sometimes was hafted as No. 10, Plate XIII. In the average outline of these implements, the length is four to five times the width, sometimes it goes to eight or nine, while in others it is about as $2\frac{1}{2} : 1$; when they become more leaf shape (No. 11, Plate X). There were two very interesting flakes about $3\frac{1}{2}$ inches long, and $\frac{5}{8}$ -inch and $\frac{3}{4}$ -inch wide; the points and edges of these show signs of use: they may have been fabricators.

From the simple used edge flake, we pass to the side and hollow scrapers. The hollows are sometimes single (as No. 12, Plate XI), at others double (as No. 17, Plate XIII), usually they are on the side of a shapeless flake, but occasionally they occur on the side of a well-formed spear or lance head as No. 18, Plate XIII, the same as we find them in the paleolithic *hâches*. The positions of the hollows are extremely interesting, being variously placed from the base of the flake to the point; in the latter case they pass into gouges, chisels and graters.

The side gouges are exactly similar to those from Laugerie Basse, Gorge d'Enfer, and the Madelaine. In the middens and the Sevenoaks districts, the right and left curved points pass into those with bisymmetrical convex ends, thence through the rectangular, such as those from Les Eyzies, with edges both at right angles and oblique, to those with convex points such as have been found in Le Madelaine. A series of these is shown in Nos. 13 to 18, Plate X.

Drills, awls, or perforators.—There is a well represented group, both in the middens and from Sevenoaks, of those forms which have been variously called by the above names. Some of these are exactly similar to the so-called awls or graters from

the Madelaine; the Americans call them perforators. They are usually made from a long flake, the top of which is brought, by secondary working, to an equilateral point, such as No. 19, Plate XI.

In others they are short and very small, but just as symmetrical, and in the highly specialised ones, the butt is rounded and secondarily worked. In others they are more irregular, similar to ordinary neolithic forms, and often show reversed working or the abrasion from boring. In size the perforator is from a $\frac{5}{8}$ -inch equilateral triangle down to about the size of a very small worsted needle. In yet others they are long pyriform shapes, 3 inches by $1\frac{1}{4}$ inches, tapering to a three-sided point, which show signs of use in boring.

Scrapers.:—In the middens only one or two of the ordinary thumb scrapers were found, but there were several spatulate forms, somewhat thick and short, as No. 20, Plate X, and No. 21, Plate XI, the latter being worked at both ends, and a half-a-dozen more or less leaf-shaped, small thin implements which from their shape and used edges might be called scrapers.

Flint saw.:—There was one very delicate little flint saw with fine teeth (No. 22, Plate X); it is less than half the size of the one found on the Sevenoaks settlement.

Cooking stones.:—The soot upon the pots and the quantity of charcoal and old hearths, clearly point to an extensive use of fire and the ordinary process of boiling; still there were a quarter of a peck or so of the so-called "pot boilers"; considering that the gipsies still invest the hedgehog with a clay jacket, then cover it with flints, and these with wood, in the process of cooking, there is no reason why pot boilers should not be found long after the art of cooking in baked earthen pots had been discovered. The idea that these stones were dropt into pots to heat the water is not supported by the physical condition of the flints, nor by the survival of the custom of "cooking the hedgehog in his jacket."

The highly specialised forms.:—The charming little highly specialised forms which occur in the middens can be best appreciated when described with others from the neighbourhood of Sevenoaks, and will therefore be included in a succeeding paper; no large war implement was discovered, and no traces of polished stone.

In the early spring I hope to expend the rest of the grant made to me by the British Association for these researches, which I hope will bring to light some further features of interest of which I at present have only the indication.¹

¹ Since the above was written extensive excavations have resulted in a great increase of material which, when worked out, will add greatly to the list of objects recovered.

Conclusion :—Finally I cannot help feeling that the productions of a position and conditions like these, must for ever settle the question of the human origin of the plateau specimens. No one for a moment could attempt to doubt the human origin of these used flints, and one may therefore ask why one or two still refuse to accord a similar origin for similar work when it occurs in other positions which would require an extension of the period sometimes assigned to man in Britain. Here in the middens we have irregular flakes of all sorts, sizes, and descriptions, just picked up, used, and thrown down again; every edge is fresh and sharp, except those that have been used, exactly as they are in the unworn plateau specimens, yet we cannot call beach-action to our aid in the formation of these hollow scrapers nor the guilty plough for taking off one side of a flake to make it bilaterally symmetrical, nor can these flints even be said to have been in any way submitted to the vicissitudes of gravel making; yet few are aware of how great a number of even the most specialised of these midden implements have their prototypes in plateau forms. But leaving this question out of consideration I trust that you will admit that I have done sufficient to show that we have veritable kitchen middens in this country, and that although somewhat different from those of the Continent and Scotland, that the result, so far as I have gone, shows that they were waste heaps for the reception of disused rubbish, shells, bones, potsherds, and the other paraphernalia of life, whatever further developments may reveal. I trust you will further allow that these discoveries point to the fact that there is such an immense amount of undeveloped material just outside our own doors, that until we know much more about it, we had better beat our pens into geological hammers.

NOTES *on a* REMARKABLE BARROW at SEVENOAKS.

By W. J. LEWIS ABBOTT, F.G.S.

[WITH PLATES X AND XIII.]

IN no spot in this country is the history of man upon our planet so consecutively written as on the Sevenoaks counter-scarp; and in addition to the five great period-peoples¹ who have been described as having left their relics behind in this locality, more detailed survey shows that the last great period, the neolithic, was characterised by a number of distinct races, each with their own sites, their own mode of life and special implements. Unfortunately, when I commenced my researches in Sevenoaks, I was a victim to a now exploded idea that "surface

¹ "Natural Science," vol. iv, p. 266.

finds have no scientific value, and accordingly the results of my first year's labours were greatly discounted, as I merely put together all neoliths from one district without detailing the *exact* spot from whence they came. However, I soon discovered that certain fields or spots are characterised by implements of one type, and others by another, the areas being well defined when taken in connection with the present lie of the surface. The sites selected by these various peoples are in many respects quite different: thus the pit villages or pit dwellings are on commanding positions, without regard to proximity to water, other settlements are on valley sides near good drink supplies, while others are near large lakes or rivers.

In early pleistocene times a stream rose on a part of the greensand counterscarp, which has since been removed, and flowed through what is now Knole Park—where it received east and west branches—over the Wildernesse, thence to the old Darenth. This old Knole river must have come in contact with a flint gravel left behind in the very early denudation of the Holmesdale valley, as the favourite implement-making material occurs sparingly distributed through its gravel, and its banks and crests formed favourite sites for neolithic peoples. Subsequent denudation has greatly altered the surface of the country, but at one time the Knole must have been an important river, for as much as 12 feet of gravel is still left in places. Soon after reaching the Wildernesse the old stream appears at one time to have branched out to the north-west, excavating several valleys, and cloaking them with gravel, or else, with the lowering of the waters of the Knole, the springs on the west thrown out by the fullers-earth bed gave rise to coombs, over whose surface the previously deposited gravels crept down. One of these valleys still carries water at about a quarter of a mile from the old Knole valley, and in a few hundred yards turns the Greatness Mills. Such a well-wooded, well-watered spot as this, sheltered by commanding high grounds, and withal, provided with sufficient material for flint implements, must indeed have offered a tempting position for a settlement, although, so far as I have been able to find, only one particular race ever appropriated it. On the east side of the Knole, only a quarter of a mile distant, we have the relics of a more warlike tribe with polished celts and barbed arrow tips, implements altogether different from those of the race about to be described. On the north-east side and south-west of this bank, for a distance of about a quarter of a mile, a people settled whose implements were extremely varied, but on the whole very similar to those of the Hastings Kitchen Midden, hundreds of them being identical.

Upon the heights separating this valley from the next, which are

less than a quarter of a mile apart, there is a remarkable barrow now to be described. The bed rock is of Folkestone sand which here, in an undisturbed state, is deeply iron-stained, and in places carries contorted seams of highly ferruginous sandstone, known as carstone. The barrow was planted with firs about one hundred years ago: it is practically round, being about 80 feet by 90 feet and about 5 feet 6 inches high. In opening it a trench was run across the centre from north to south, and from east to west. For the first 4 feet the material was a dark, slightly carbonaceous sand, and, with some half-dozen workers, only three flints were found in the whole of the excavation of this material. This was followed by a ferruginous sand which had become quite panned and solid; and when reached it was agreed by all present that the cleared surface represented mother rock, and that we had not struck oil, and, yielding to the advice of others, I abandoned the exploration. I must confess that this was extremely disappointing, as Lord Hillingdon, his sons and some friends had been good enough to come down and witness the discoveries which then ended in nothing. The next day I resolved to set to work again, and break through the solidified sand which I soon did, and came upon a layer of white sand, then a layer of carstone, then a remarkable layer of carbonaceous material and burned implements; then another layer of carstone, which apparently rests upon undisturbed Folkestone beds. The upper surface of the lower band of carstone, in the centre, was covered with a black, somewhat greasy-feeling, excessively dirty carbonaceous material; a condition descriptive of the whole of the material between the two carstone layers. Here and there we found extremely small fragments of burned bone, but never a quarter of an inch in length, although the cellular structure of the bone was often distinctly visible, and pieces of wood charcoal were fairly common. But the most remarkable thing was that, be the carbonized body what it might, cremation had evidently been effected by covering it with implements and then lighting the fire over them. During the process of calcination the implements—of which there were simply thousands—naturally went to pieces, and in some cases absolutely fused at the edges. I have been able to restore a number of these. Now and then I have been fortunate enough to get adjacent pieces, but, in by far the greater number of cases, shapes are restored from the unburned specimens in the white band and the adjoining settlement. Everyone who has examined this black material recognises in it the usual feel of the material resulting from cremation. Canon Greenwell has notified the fact that a similar unctuous layer was found in the Rudstone barrow. The most remarkable

thing was, that the white layer was practically full of implements; towards the centre they were often burned, but the proportion of the calcined specimens diminished as the periphery was approached. I do not know an exposure of a bed of white sand of this description within nearly half a mile. It is perfectly white, and the line both above and below is absolutely sharp. It extends over the whole of the area that has been excavated, and appears to cover up the remains contained between the two layers of carstone. At first I thought these flakes and implements might have been brought in with the neighbouring soil, but Canon Greenwell has shown the improbability, and indeed, in some cases, the impossibility, of this sort of thing happening,¹ and I think we may conclude that in these times it was a funeral rite of others than suicides that "shards, flints and pebbles should be thrown on her."

Altogether this is the most puzzling thing with which I have ever met, and several anthropologists and barrow diggers who have visited it, including the venerable Canon Greenwell, state they have never seen anything exactly like it in all their experience.

In conclusion, I beg to express my thanks to the Right Honourable Lord Hillingdon, who not only readily gave me permission to open the barrow, but allowed me the use of a labourer, and interested himself generally in the undertaking. I regret that his first visit was not accompanied with the success which afterwards rewarded more determined efforts. My thanks are also due to John Duce, Esq., for the help he afforded me in many days of unpleasant, hard, and dirty work, as the greasy dirt of the carbonised layer penetrated to our very skins in the process of sifting. So great indeed was Mr. Duce's interest in the affair that I think he really did the lion's share of the labour, at any rate, in the early part of the digging operations.

IMPLEMENTS OF THE BARROW AND SETTLEMENT.

The restored implements from the calcined layer, the white band and the settlement, are generally so inseparably alike that I feel certain it will be best to describe them together, and when any particular form occurs in one position and not in the other to notify the one to which it belongs. It has also already been pointed out that an identity exists between these and those from the Hastings Kitchen Midden. The first thing that would strike one in looking over a few trays of these implements is the remarkable likeness which they bear to those from the Dordogne. Indeed many of the figures in the magnificent "*Reliquiæ Aquitanicæ*" might almost have been produced

¹ "*British Barrows*," p. 11.

from these specimens. On the whole the Dordogne flakes are perhaps a little longer in proportion, and there is an absence in the English specimens of the more decidedly paleolithic haches, nor is the surface of implements (with one or two exceptions) changed and whitened as in the French series. Both in the barrow and the settlement there were large quantities of cores of every description, as might be expected from the large number of flake implements. To give anything like a good idea of the latter, several scores of these should be figured: their mode of manufacture was similar to that shown for the Kitchen Midden implements of a similar kind. No. 1, Plate XIII, is an example of a restored spear-head from the burnt layer: these are extremely similar to those from Le Moustier and other French caves; very many hundreds of these fragments were recovered, of which this is among the largest; they vary in size down to a little over half an inch in length; a small one is shown in No. 3. Another variety of the same group is shown in No. 4, Plate XIII, and 2, Plate X. These forms are also characteristic of the French caves. They pass down into more lanceolate shapes, finally resulting in very tiny forms, less than half an inch in length. In this group very frequently the point of the implement is turned to the right or left, as in Nos. 5 and 6, a result which was obviously desirable from the fact that specimens are often worked into this shape by secondary trimming, which sometimes necessitated the working of the sides as well as the point. There is an immense group represented by very many hundreds of specimens of a more irregular outline, as though they might be the more abortive or accidental results in attempting the foregoing. These widened out on the one hand to mere wasters, and on the other they approach the before-described implements; while in size they go from half an inch in length, up to 3 or 4 inches. These usually became knives and many scores of them show used edges, with all the variety detailed in connection with the midden knives. Sometimes this wear is only very slight, at others it is very hard. No. 8 is an exquisitely worked knife. There is another group where the flake is extremely long and narrow, exactly similar to those from Laugerie Basse, as shown in No. 9, Plate X. All the foregoing are bulb-based, but there is an extensive group of bulb-pointed forms of various descriptions, from quite narrow to broad large lanceolate shapes. There are others point to bulb curved, spatulate forms, some of which, such as No. 10, were possibly hafted. The spatulate forms carry us to the more decided scrapers, which will be described below. Up to the present the more lanceolate broad spear-heads have been neglected, but they are a group of so many varieties that they had better be

kept together. They commence at about $\frac{3}{4}$ -inch long, branching out in many directions, now with low ridges, when they approximate Nos. 1 and 4, the largest one being about 4 inches by $1\frac{3}{4}$ inches; now they are higher and perhaps somewhat more irregular, while others branch out into broad leaf shapes.

The scrapers are extremely interesting, owing to the great diversity of shapes in which they occur in the barrow; anything approaching the horse-shoe pattern was extremely rare, but in the settlement outside they were plentiful, and passed from that pattern in many directions, resulting in over a dozen different forms, some being quite thin, as No. 11, Plate X, and others just as thick, and pass down to a mere split pebble worked at one edge only. Amongst the curious forms reference might be made to No. 12, which appears as if it might have been hafted, and to No. 13, a similar hafted form from the Kitchen Middens. No. 14 is a beautiful specimen of delicate edging, the sharp curve in the flake-face making the edge extremely acute and well suited for cutting. Most of the forms lead up to the spatulate shapes, No. 15. These pass up insensibly to those gouge-like forms described from the Middens. The perforators are quite as varied as the scrapers, ranging from heavy clumsy things, 4 inches in length, down to the delicate little tools employed upon the eye of a needle. No. 16 is a useful tool of well known form.

In attempting to describe the hollow scrapers one is overcome by their numbers and diversity, as there are really dozens of varieties: they are formed by a hollow of any dimension and depth worked out of the side of a flint. Usually a flake is selected for the purpose, but not unfrequently a finished spear or lance-head is thus ruined. Sometimes there is a second hollow of a different size, and usually worked from the other side, indicative of turning the implement round end for end. Sometimes the hollows are on both sides and then show reversed working. Usually the blows or percussion was administered on the flake side, but not always. The position of the hollows, too, is most interesting and gives rise to a multiplicity of shapes; occasionally it is at the extreme point, at other times just on the top corner, when it may, or may not have an overhanging beak. All these forms and many others concur in the Middens. Nos. 17 to 19 show examples of these scrapers; from those places identical forms are found in one barrow. I have carded up several hundreds of the very small hollow scrapers which were probably employed in the manufacture of bone needles, also several cards of "used edges," to show the difference. In the latter the gaps are more or less irregular and simple, but in the former the hollows show signs of use or

secondary working which often requires the lens to make them visible. Closely allied to hollow scrapers is a form which also began in plateau times and has come down to the bronze age. It is a scraper with an O.G. top edge. It is remarkable how constant this curious outline has remained: it was found in the Midden, the settlement and the barrow, sometimes excellently worked. I am perfectly at a loss to understand how one can confound the rugged edge, which results from wear, with secondary working, especially if the latter is of anything like good quality, moreover "use" only removes flakes up to a certain angle.

We come next to gouges, chisels and gravers; in the barrow and the settlement all the forms described from the Middens occur plentifully where each group is strengthened and diversified, and new ones added. That the finely pointed tools were used as gravers becomes evident from the fact that nearly all show signs of wear on the cutting edge. In a very interesting group the point is doubly oblique, exactly as in the modern graver.

There was also one very fine little saw with fine well-formed teeth.

I trust you will not consider my enthusiastic admiration has carried me into too many details of these things when I tell you that the undescribed are far greater than the described. It is usual to pick out only the highly finished arrow-tips and polished celts, and discard many things which I have here brought together, but assuredly the former tell us no more of the modes of living of their owners than would a collection of modern maces. If we would gauge the abilities of a people and acquaint ourselves with their mode of life, we must obtain a comprehensive knowledge of *all* the tools they were able to produce and use.

So far as the barrow is concerned, although but very small quantities of bone were found, I have no doubt it was the burial place of a chief of this tribe, an opinion shared by all who have seen it, including Canon Greenwell.

I think you will also admit that this remarkable series of implements and flakes demonstrates beyond all doubt that surface finds *have* a scientific value, and the exact location of all neoliths should be correctly registered, and when this has been done throughout the length and breadth of the land, we may then be able to say something of the various peoples who have inhabited Britain.

NOTES on some SPECIALISED and DIMINUTIVE FORMS of FLINT IMPLEMENTS from HASTINGS KITCHEN MIDDEN and SEVEN-OAKS. By W. J. LEWIS ABBOTT, F.G.S.

[WITH PLATES XI, XII.]

IN 1888, Mr. John Allen Brown described before this Institute some small highly-specialised forms of stone implements found in India, Syria and South Europe, and asked English observers to seek for them at home. In the next year the same author again referred to them in connection with the dawn of metallurgy. In March, 1887, Dr. Colley March privately published an account of his discoveries of similar implements in a floor in East Lancashire, which at about a uniform altitude caps six conical hills. From the existence of the relics of an ancient growth of grass and brushwood, which is entirely different from the heather and moss which now flourishes here, from the presence of a layer of clay, and the whole being overlaid by a layer of peat 4 to 10 feet in thickness, Dr. Colley March infers that these hills, the heights of which vary from 1,300 feet to 1,440 above sea level, have been cut out since the now buried deposits formed a continuous floor over the country. A hundred and forty feet erosion over a fairly level country, however, is generally regarded as the work of a period which would carry us back to paleolithic times, and one cannot help wishing for a more extended detailed geological survey of the neighbourhood.

The Rev. Reginald D. Gatty, of Hooton Roberts Rectory, Rotherham, has also been engaged on these charming little objects, and in twenty years' diligent searching, during which time he has acquired many thousands of ordinary neoliths, he has only found these very small things in a very few localities, but from the exchange of sketches, our types appear identical.

In 1883, Mr. Elliott, of Camberwell, one of the most enthusiastic collectors of whom I have ever heard, found one of the small crescent forms near Warren Hill, in the valley of the Ouse, which is absolutely indistinguishable from the first one I found at the Hastings Kitchen Midden. For eight years he and Mrs. Elliott vainly searched for the floor whence it came, but, in 1893, Mrs. Elliott was successful. Here they found a large quantity of implements and flakes similar to those of the Settlement and some thirteen more of the little crescents. It is perfectly astounding how exactly these things resemble my own.

Dr. Colley March has also found them in the Isle of Man. I am also informed that one of these crescents has been obtained from the Thames, and one from the Surrey Hills. The localities

in this country in which these small implements are found are very limited, and the majority of our most diligent and experienced collectors up to the present have been quite unsuccessful in finding them.

On the continent the brothers Siret, whose extended work in Spain is well known to Members of this Institute, have found them in a number of places, while M. Pierpont has recently published an exhaustive paper upon them,¹ and their occurrence in the region of the Meuse. Up to the present they have been found under conditions which suggested an antiquity for them to their finders as great as the later paleolithic period and hitherto no organic remains have been found associated with them to shake the faith of the various authors in their higher antiquity. Mr. John Allen Brown, on the other hand, claims for them a date corresponding to the dawn of metallurgy. All of the above authors who have seen my specimens or drawings of them, regard them as similar to their own, but I think it will be admitted that the conditions under which the Sevenoaks and Hastings specimens were found, together with their associated fossils, can leave but little doubt as to the age of these interesting little tools. There are two features about them which to my mind distinguish them from all other implements—viz., their characteristic shapes, and peculiar quality of working, which is usually—though not always—present. Generally they are extremely small, but I do not consider size alone would have been sufficient to justify the placing of the implements into a special group, and assigning to it a special age.

I have many tiny flakes about $\frac{1}{2}$ inch long which owe their present, sometimes geometric, outline to secondary working and use, but I should have been inclined to have regarded these as only the small varieties of well known neolithic forms had it not been for the connecting forms. In many of the Indian specimens collected by Mr. Carlyle the characteristic fine work is not present, while his small flake implements I have placed with the other groups as the difference is one of size only, and in the thousands which I have collected there are no gaps. Moreover, it is certain that one people executed them all.

It is easy to distinguish between a used edge and an ordinary neolithic secondarily worked one; but in these little implements the work is dissimilar from both. In the former, the concavities or gaps are characteristically irregular, and the direction of them varies with the irregularities in the thickness of the flake, the molecular aggregation of the flint, and the

¹ "De très petits instruments en Silex provenant de plusieurs stations néolithiques de la Région de la Meuse." "Bulletin de la Société de Bruxelles," 1894-5.

angle at which the flake met the resistance; and if a levelling is effected it is accompanied by contusion. In the second case, when worked from a flake face the secondary flakes are usually distinct, resulting in well-marked concavities with conchoidal ribbing, usually being quite distinct and prominent, and extending across the whole of the flaked surface or edge. The implements under description are usually made from single-ridged flakes, or occasionally the other ridges present suggest intention or careful selection of flakes operated upon. One or more sides or ends are then reworked in a manner quite characteristic. The secondary working is always administered from the flake face and *not* from the ridge face, as is so frequently the case with *used* flakes. It comes upon the flake face at an obtuse angle of from 65 degrees to 80 degrees. It is, however, the regularity and fineness of the work which immediately distinguishes it; when the flake operated upon is about $\frac{1}{30}$ th of an inch and less in thickness, the secondary flakes are single, but when of a greater thickness than this, the larger flakes removed increase in size, and there is a tertiary flaking present in which the flakes are frequently about $\frac{1}{30}$ th of an inch wide, which give an almost smooth cutting edge. Straightness in the line of work, consequent upon the method by which it was effected giving rise to characteristic angularity of outline, and usually to asymmetry. This small work, however, is by no means confined to straight edges but is run round the hollows left by larger flakes with a regularity which is almost of machine trueness, or round the entire edge of the implement, irrespective of its shape, whether it be a lanceolate arrow-tip or one of the persistently queer forms the use of which is absolutely incomprehensible. I think it only fair, however, to state that since writing the foregoing, I have learnt that Sir John Evans considers that these curious little things "result from their use as scraping or boring tools, the flakes in the former case having probably had one edge let into wood which in consequence prohibited it from wear. The diagonal-ended flakes are also not uncommon and result from the end and not the side of the flake having been used for scraping." I thus have the misfortune to find myself entirely disagreeing with the verdict of Sir John Evans, although I am supported by every one who has studied these curious little objects. That they are not the result of use has been conclusively shown and in many forms they are worked all round, or in others on one side to produce bilateral symmetry, as in lanceolate arrow-tips. The drill or borer theory is a little astounding as nothing is so easy to recognise as an abrasion caused by a circular motion which necessarily brings the wear on alternate edges, but as has been

already pointed out the working (or abrasion?) is always from the flake face except it be in finishing an irregular point; moreover drills are well represented in a separated class where they are survivals of forms which first appear on the plateau. As to the long oblique forms, M. Pierpont figures an instrument used for tattooing amongst the Bengalas of Upper Congo to-day, of exactly similar outline to these; and further these are often worked on three sides, and to a long hafting point. No operation with which we are acquainted could result in the outlines presented by some of these, whether they be the simpler lanceolate arrow-tips worked all round, the crescents similarly treated, or any of the more curious but persistent forms. We will therefore proceed to a brief description of some of these forms and afterwards see what inferences can be drawn from their characteristic working, their peculiar shape, the interesting positions in which they are found, and the things with which they were associated. Up to the present I have discovered about eighty specimens from the Hastings Kitchen Midden, the Wildernesse Settlement and Barrow, at Sevenoaks, in which is included the field used as Seale's horticultural garden. I have also obtained them from other barrows and several other parts in the neighbourhood. In looking over the interesting collection of these forms in the British Museum or those in Mr. Allen Brown's collection, one cannot help being immediately struck with the identity of some of the forms found in Central India and England, and the quality and nature of the work. Of course the material is different; in both cases the indigenous forms of silica is employed, the European flint being usually replaced in India by chalcedony, either white or red, and occasionally by jaspers.

Commencing with the most simple forms, No. 6 in Mr. Brown's paper is probably a broken implement as is No. 1 here shown, but in my case, the flint is of a peculiar colour, texture, condition, and of a spotted appearance; it was found by my little five-year old daughter on the Wildernesse Settlement, who also picked up a point, in every way, of the same character of flint, which possibly is part of the same implement. When complete the acicular tool was a little over $1\frac{1}{2}$ inches long and a $\frac{1}{4}$ of an inch wide at the broadest part. It was worked from a high flat-ridged flake, symmetry being obtained by the characteristic secondary work. I have a number of butt ends of this type, some much smaller, showing the same kind of secondary work. No. 2 is a perfect little implement from the Hastings Kitchen Midden of the same character, it is extremely sharp, and the sides, which are only $\frac{3}{4}$ of an inch in length, have been brought into shape by the

removal of over sixty minute flakes. It is very remarkable in how many instances the work is practically confined to one side which often brings the ridge from the centre to nearly parallel with the edge. Except in those more acicular forms, Nos. 1, 2, 3, bilateral symmetry is hardly ever aimed at. No. 4 is a charming little implement similar to the Congo tattooing instruments; it is just under $\frac{3}{4}$ of an inch long and $\frac{9}{16}$ of an inch at its widest part; the hafted end is very delicately worked to a point sweeping round in a graceful curve; the top left edge is replaced by an oblique point which cuts through the flake ridge, in about its centre. No. 5 is a similar instrument, half again as large; unfortunately this is broken. There is a variety of a somewhat broader outline and heavier make than the foregoing brought into the desired shape by this rectilinear secondary working on one side; the largest one is shown in No. 6, it is from the Hastings Midden; one from the barrow at the Wildernessee is shown in No. 7. In the Settlement and barrow, identical, though smaller specimens were found, where they were accompanied by similar forms with heavier and more irregular work, as No. 44; but in addition to the coarser secondary work, the finer tertiary work is also present, as in similar Indian examples. One of the most characteristic and at the same time most interesting groups is furnished by the crescent forms; although many of these are similar to some of the Indian examples; others differ in some respects. In the former they are usually an arc of a circle, or plano-convex in section; the chord forming the straight edge is usually unworked and quite straight (shapes, needless to observe, which would be absolutely impossible on the theory of Sir John Evans). My specimens are not usually so circular as these; owing to the rectilinear working they generally present a decided angular hump in the centre, and as frequently as not are worked on both sides; they pass from bilateral symmetry to deeply concavo-convex. I have found a large number of these crescents which have been broken, the smallest that I have found is about $\frac{3}{4}$ inch long, and $\frac{1}{6}$ inch broad in the widest part, No. 8. This is reworked, the whole of the convex side and the greater part of the somewhat concave side. No. 10 is a more bilaterally symmetrical form and worked as nearly all round as is necessary to secure the desired outline. Nos. 11, 12, and 19 all show that characteristic right line working which in every case gives rise to an angular hump or obtuse angle on the outer edge. Nos. 81, 20, 82, and 83 are examples of crescents, more or less injured. Considering that these are found in the midden in several barrows near water, and on settlements near large bodies of the piscatorial element, I am inclined to regard these as fish-hooks,

usually are. On the settlement I found a bronze ring very crudely made flattened from above downwards, probably a finger ornament. I also found a similar size piece of bronze lying on one of the rock ledges near the midden at Hastings.

Taken as a whole it appears to me that we may learn a lesson from these finds ; if the researches had only been of the usual limited nature and one had only found a few of the articles, we might have assigned them to quite different periods, according to the nature of the things rescued ; had one found only those which are essentially similar to, or even identical with, the later French cave series, we might have set back their date considerably as M. Pierpont has suggested. Had we met with a few of the "highly specialised" forms only we might have assigned them to a people or tribe, with which we heretofore had been unacquainted ; while finding them in close proximity to, or associated with, bronze articles, we assign them to the latter period. It must be conceded that many of these forms are identical with the Indian specimens in several important characteristic points, so close indeed that it becomes impossible to separate the two groups. It cannot, however, for one moment be supposed that these very small implements were the only ones used by a people, and seeing that they pass both in outline and work into larger and more varied tools such as would be demanded in the needs of daily life, I see no reason why we should not regard all these as the product of one people, especially as they differ greatly, or, I may say, entirely from many other groups of neoliths now to be found over well-defined areas, some of which I hope to have the honour to describe to you on a future occasion. When we take these papers together we have a number of facts which may enable us to fix an approximate date, but as the researches are by no means concluded, too much theorizing had better not be indulged in. As to the midden it is interesting to note that the same highly specialised forms have been found in the Portuguese Middens, while the fauna may also assist us ; the existence of sheep or goat, dog and ox, bring down the age to close on the Neolithic period, while the round barrows and the practice of cremation are also characteristic of the dawn of the bronze age. Dr. Colley March has suggested that whatever may prove the age of the Hastings and Sevenoaks finds, his are still of great antiquity, which indeed must be the case if his geology be correct,¹ and that the southern examples may represent a lingering on of the same people to a later date. It appears that at no period were

¹ Unfortunately I am not familiar with the geology of the district and therefore can give no opinion, but should nevertheless expect a mistake somewhere.

ABORIGINAL ROCK PAINTINGS.

SCALE 4 FEET TO AN INCH.

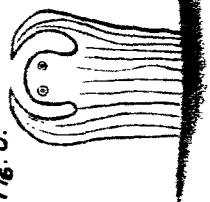
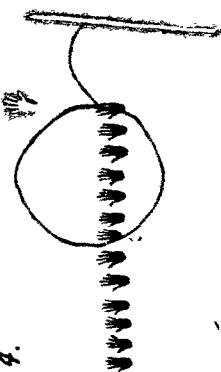
Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.



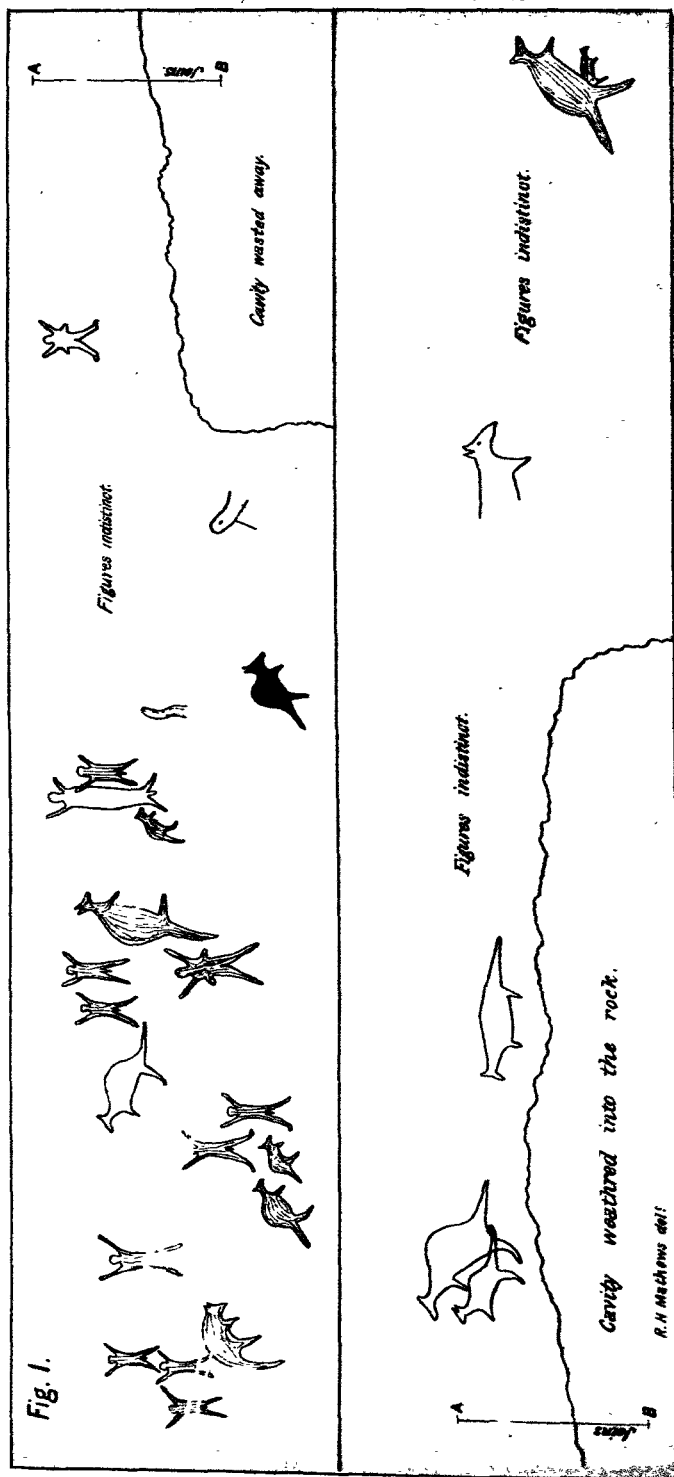
R.H. Mathews del.

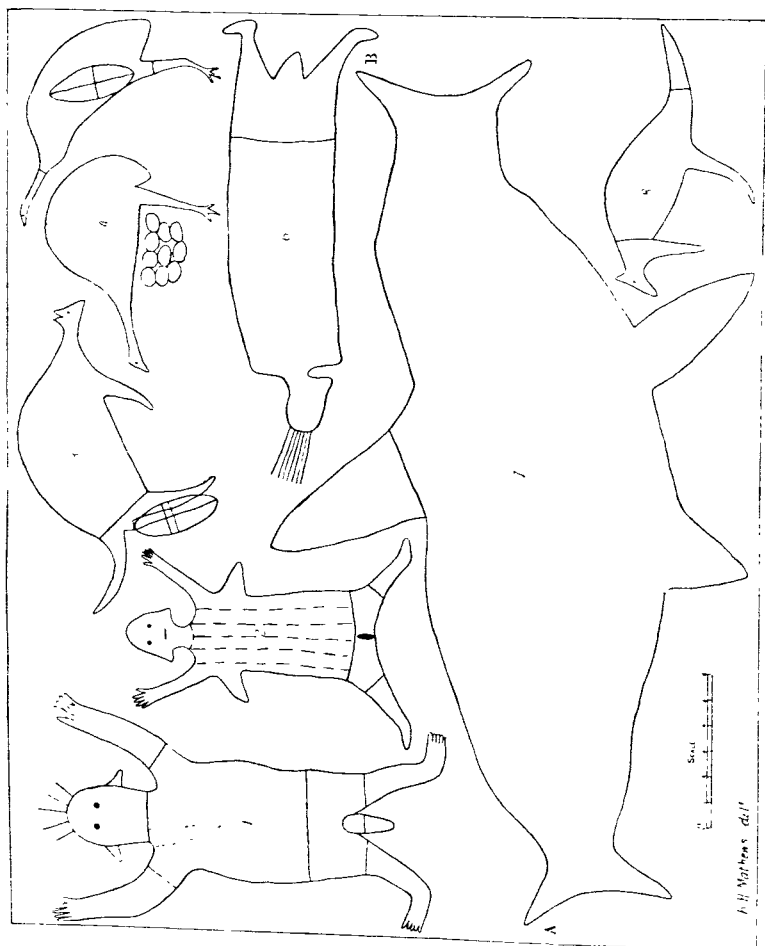
[illegible]

1. *Chlorophyll a* (Chl a) and *Chlorophyll b* (Chl b) are the primary photosynthetic pigments in green plants. They are responsible for capturing light energy and converting it into chemical energy through the process of photosynthesis. Chl a is the most abundant pigment, while Chl b is present in smaller amounts. Both pigments absorb light in the blue and red regions of the visible spectrum.

ABORIGINAL ROCK PAINTINGS.

SCALE 4 FEET TO AN INCH.





ABORIGINAL ROCK CARVINGS

they a warlike race, and they may after all only have been a nomadic people like the gipsies, who, indeed, might be able to claim a closer relation with the dark-skinned Indians than the fair Saxons. The survival of stone-cooking among the gipsies is also very suggestive. It is quite clear that the Hastings Midden and the Wildernesse Barrow are of the same age, and if we admit the identity of the implements with those from further south, we must also admit that they were used by men who had immigrated to Britain from India across Africa, Spain and Belgium at the dawn of the bronze age. Taken as a whole we have every reason to consider that these implements were made by a race who lived more by hunting than war, a conclusion which no future research will well vitiate. When we take this remarkable group of implements from India, through Egypt, south of Europe, the Valley of the Meuse, and England, and see such a similarity or, indeed, identity of such highly characteristic or specialised forms, are we not justified in regarding them as the work of a people migrating northward? But whether these were the fathers of the so-called Indo-European branch of the human family is another question, for if they were we should be able to answer the question, "Can the Ethiopian change his skin?" in the affirmative, a conclusion which I fear would not prove acceptable to many of our leading Continental and English anthropologists.

The ROCK PAINTINGS and CARVINGS of the AUSTRALIAN ABORIGINES. By R. H. MATHEWS, Licensed Surveyor.

[WITH PLATES XIV, XV, XVI.]

THE painted and carved rocks of Australia, the handiwork of the aboriginal inhabitants, are widely scattered over the continent, and it is matter of surprise that a subject of so much interest and value to anthropologists should have been so long neglected by scientific men, and others, competent to deal with them. It is greatly to be deplored that these drawings received so little attention from early settlers in the Australian colonies, who must have had numerous opportunities of observing them, and that no efforts were at that time made to record and preserve these specimens of pictorial art, showing the imitative and inventive faculties of a primitive people.

Being desirous of assisting in the discovery and preservation of these works of native art, I have been endeavouring, for some time, to copy and describe in detail as many of them as possible, and to fix their position on the public maps, in order

that they may be readily found by students of anthropology wishing to visit them. Thorough and systematic collection of data can alone give a reliable groundwork for the study of this subject; and the work must be undertaken at once, while there is still opportunity, or it will prove either incomplete, or too late altogether.

In several of the carvings found by me upon rocks, only parts of the figures could with difficulty be traced out; in others, the whole outline was faintly distinguishable; whilst others were clear and well defined. The same remarks will apply to the paintings. In the numerous caves visited by me, some contained paintings which were quite distinct; whilst in others the figures were in various stages of decay, some being barely discernible owing to the wasting of the rock under atmospheric influences; and in some instances I was told by old residents that in caves which they once knew to contain paintings nothing is now visible. It is evident that these native drawings will become fainter and fewer as time rolls on, hence it is very desirable that those who have opportunities, and are willing to give us the results of their investigations, should be encouraged by all learned societies to copy these records of a people who are rapidly disappearing before the white race.

In the "Journal of the Royal Society of N.S. Wales," vol. xxvii, pp. 353-8, I described some "Rock Paintings by the Aborigines on Bulgar Creek, N.S. Wales," and in vol. xxix of that journal, now in the press, I dealt with the "Aboriginal Rock Carvings and Paintings in New South Wales," for which I was awarded the Society's Medal.¹ I also contributed a paper on the same subject to the Royal Society of Victoria, which appears in their "Proceedings," vol. vii (N.S.) pp. 143-156. Another paper, on "The Aboriginal Rock Pictures of Australia," was contributed by me to the Royal Geographical Society of Australasia, Queensland Branch, and is published in their "Proceedings," vol. x, pp. 46-70.

Since writing the papers referred to, I have continued my investigations, and have succeeded in finding several other groups of aboriginal drawings which I shall describe and illustrate in this paper. I hope it is only necessary to point out the value of these specimens of native art for scientific purposes, to awaken an interest in them among people who would otherwise pass them by without notice.

The rock pictures of the Australian aborigines must be classed under two distinct heads, *paintings* and *carvings*. In the former, the pictures are painted on the walls or roofs of rock-shelters in various colours; in the latter, the drawings are

¹ "Journ. Roy. Soc. N.S. Wales," xxviii, pp. 329-330.

in the nature of outline engravings or carvings cut or ground into the surface of the rock. I will therefore deal with the subject under the two divisions indicated:—

Paintings, how produced.—Aboriginal rock paintings are executed in three different ways, which I shall call, for the purpose of my description, (1) the stencil method; (2) the impression method; and (3) the outline method, or ordinary drawing.

(1) In *stencilling* figures of the human hand, or other objects, on the walls or roofs of caves or rock-shelters, a smooth surface was selected, and slightly wetted or damped with water. The palm of the hand was then placed firmly on the rock, with the fingers and thumb spread out, and the required colour, in a dry state, blown over it out of the mouth. On removing the hand the space it occupied remained clean, whilst the surface of the rock surrounding its margin was tinted with the colour used by the operator, contrasting strongly with the uncoloured figure of the hand, and giving it the appearance of standing out in relief. In some cases, part of the arm, as far as the elbow, or farther, was also shown. For examples of stencilled hands see Plate XIV Fig. 1. For the white colours they used pipe-clay, and for the red, red oxide of iron, commonly called red ochre. Both Mr. E. Giles and Mr. Winnecke, in their accounts of their explorations in Central Australia in 1873 and 1879 respectively state that they saw hands stencilled upon rocks with powdered charcoal, which was applied in the same way as I have described. I have seen hands and other objects stencilled in white, red or yellow, but black colour does not appear to have been used for stencilling among the natives of the districts visited by me. Previously damping the rock causes the dry powder of whatever colour to firmly adhere to the surface, where it appears to have the durability of an ordinary pigment. This method of drawing was also adopted in many instances in representing implements of the chase, such as boomerangs, tomahawks, waddies, &c. In some of the stencilled paintings which have come under my notice, the colouring matter around the margin of the object had the appearance of having been applied to the rock in a wet or pasty state. I have reason to think that in many instances the colour was applied with some kind of mop or brush, or was blown in a moist state out of the mouth of the operator.

Although it is probable that in many stencilled pictures of hands, the hand was held in position on the rock, and the colour applied by the same operator, an inspection of Plate XIV will show conclusively that two or more persons must have participated in drawing some of the objects. For instance, the stick shown in Fig. 4 must have been held on the rock by one person, whilst another applied the colour. Boomerangs,

tomahawks, and sticks, some of the latter being about 4 feet long, would require at least two persons to join in the work.

(2) In the *impression* method, the colour to be used was mixed with water, or with bird or fish oil, in a native vessel of some kind, into which the palm of the hand was lightly dipped, and then pressed firmly against the surface of the rock, and on the removal of the hand, the coloured imprint of it was left clearly defined. I have never seen or heard of any figures except the hand having been executed in this method, and the only colours used in the caves which have come under my observation are red and white. R. B. Smyth, in his "Aborigines of Victoria," i, p. 291, states that he was informed by Mr. Brown that the natives of Western Australia made these impressions by blackening their hands, and then pressing them against the rock. The black colour would no doubt be obtained by mixing powdered charcoal or soot with oil or water. E. M. Curr, in his work "The Australian Race," vol. ii, p. 301, says, "To mark a clean surface with a dirty, greasy, or painted hand is a common practice of our blacks, and I have seen them do it in several places long distances apart." And again in vol. iii, p. 679, he says, "I have often myself seen the blacks imprint their hands, stained with red ochre, on suitable surfaces, and cannot accept such marks as a proof of antiquity." In the districts visited by me in collecting information on the subject of this paper, I have found impressed hands in comparatively few caves, the stencil method being that generally adopted; and in both these methods, it was the palm, and never the back of the hand, which was used. Correspondents have told me that impressed hands have been seen by them in the Kimberley district of West Australia, and also in the central parts of South Australia, but were not common. For examples in the impression method see the thirteen hands represented in Plate XIV, Fig. 4.

(3) Native pictures of men, animals, and other objects to which neither of the preceding methods would be applicable, were drawn in *outline* in the required colours. In some cases the objects depicted were merely outlined, in other instances they were shown in solid colour all over, whilst in others the space within the margin of the outlines was shaded by strokes of the same colour, or a different one. In these cases the colours were mixed with bird or fish oil, or the fat of some other animal; pipe-clay and red ochre being used for white and red respectively, and when a black colour was required, it was made from ground charcoal or soot, similarly mixed with grease. Mixing the colours with an oily or fatty substance caused them to *penetrate* the surface of the rock, and become very durable.

Judging by the appearance of the lines in several of the figures drawn in this method, I think it not unlikely that in some cases before commencing the drawing, the surface of the rock was damped with water, or slightly moistened with grease, and that then a piece of the required colour, as a lump of red ochre, or pipe-clay, or charcoal, was held in the hand of the operator, and the necessary lines drawn with it upon the rock.

Besides the colours mentioned, vegetable colours were also known to the aborigines. E. Stephens says, "The natives painted red bands on their shields by means of the juice of a small tuber which grew in abundance in the bush." "Journ. Roy. Soc. N.S.W.," xxiii, p. 487.

I have visited a very large number of caves containing native paintings, and only in a few of them have I found yellow colour employed, and then only for a few small figures—yellow clays not being plentiful.

Carvings, how produced.—Three methods appear to have been employed by the aborigines in producing rock-carvings. (1) That most generally adopted was to cut the outline of the required figure on the surface of the rock with some sharp pointed instrument. (2) In other instances the whole surface of the rock within the outline of the figure was cut away to the same depth as the exterior groove, as in the cases mentioned by Capt. Wickham at Depuch Island, quoted by me in this paper. (3) Another method was to trace on the rock the object to be drawn, and then to grind it out by repeated rubbing with a piece of hard stone or pebble along the outline which had been traced.

(1) In visiting groups of native carvings in different localities around Sydney and adjacent districts, I came upon some figures which had been partially carried out, and then abandoned, which disclosed the manner in which the work had been done. A number of holes were first made close together along the outline of the figure to be drawn, and these were afterwards connected by cutting out the intervening spaces, thus making a continuous groove of the required depth and width. In some of the best executed figures I found these grooves about $\frac{1}{2}$ -inch deep, and about $1\frac{1}{4}$ inch wide. In many of the inferior carvings the depth and width are much less. It is probable that the object was first outlined by drawing a piece of coloured stone or hard pebble along the outline to be cut out. Judging by the indentations made in the rock in cutting out the lines of these figures, I conclude that the natives had a hard stone or pebble chipped or ground to a point and used as a chisel. As soon as the outline of the figure was chiselled out to the requisite depth, I think a stone tomahawk as well as the

chisel was used in completing the work. I am led to this opinion, because the sides of the groove are cut more evenly than could have been done with such an instrument as the holes were punctured with; and there is no doubt the work could thus be done with greater expedition. In support of these conclusions I may state that close to Fig. 1, Plate XVI, I found a sandstone rock which had been used by the aborigines for grinding their stone tomahawks. I saw similar grinding places¹ on the rocks close to other drawings. The carvings of men and other objects are generally found on horizontal surfaces, but are not infrequently met with on the walls of rock occupying various slopes between the horizontal and the perpendicular position.

(2) In some of the Depuch Island carvings, described by Capt. Wickham in the "Journal of the Royal Geographical Society," xii, pp. 79–83, the whole surface of the rock within the figure was cut away, whilst others were only in outline. The depth of the cutting is not given in either instance, but it probably did not exceed about $\frac{1}{2}$ -inch, the object being merely to expose the unweathered surface of the rock. Capt. Wickham, who examined the carvings carefully and made drawings and descriptions of 92 of them in different places, appears to have found sufficient evidence to enable him to arrive at the conclusion that they were cut out "with sharp pointed pieces of the same stone." This is a point of great interest and value to the anthropologist, because it shows that the same, or at any rate an analogous, method of producing carvings was adopted by the natives of the western coast of West Australia, as that in vogue among the natives of the coast of New South Wales.

(3) In the Murchison district of Western Australia, Mr. E. Favenc informs me that he found outlines of the human foot, and other marks, scratched upon the surface of granite rocks. These outlines had apparently been worn into the surface of the stone by repeated rubbing with a hard pebble held in the hand of the operator. The drawings were not deep, but would probably last a long time, owing to the hardness and durability of the granite rocks on which they appeared.

Geographical Distribution.—These native drawings are so numerous and widespread, that it would be beyond the scope of a short paper like the present to make a compilation from the few scattered notes found in the works of various writers who have referred to them in different parts of Australia, but I think

¹ For full descriptions and drawings of similar native grinding places, see my paper on "Some Stone Implements used by the Aborigines of N.S. Wales," published in the "Journal of the Royal Society of N.S.W.," vol. xxviii, pp. 301–305, Plate XLIII, Fig. 3.

it is desirable to enumerate a few of the localities in each of the colonies in which they have been observed.

Rock paintings have been seen in West Australia on the Glenelg, Avon, and Upper Prince Regent's rivers, as well as in other localities. They are found throughout South Australia from the southern portion of it along the overland telegraph line to Port Darwin, and the Gulf of Carpentaria; they are also referred to by the explorers Gregory, Giles, Warburton, and others. These paintings are widely distributed over New South Wales, having been observed on the following rivers:—Shoalhaven, Woronora, Hawkesbury, Hunter, Cudgegong, Merriwa, Talbragar, Clarence and several others. In Queensland they are scattered from the most northern to the southern limits of the colony, having been found at Cape York, at Prince Charlotte's Bay, and on the following rivers amongst others:—the Leichhardt, Flinders, Mitchell, Cape, Herbert, and Dawson, and at various other places throughout the colony. In Victoria, paintings are found on the western side of the Victoria Range, County of Dundas, and on the north-eastern side of the Grampians, County of Borung.

Rock carvings are neither so numerous, nor have such a wide geographical range as the paintings, although they have been observed in all the colonies above named, with the exception of Victoria. I am instituting investigations in likely districts of Victoria, which will, it is hoped, result in the discovery of native carvings in that colony. In South Australia, rude outlines, representing footmarks of men, kangaroos and emus, and some simple devices, have been observed at a few places long distances apart. Some unintelligible scratchings have been seen on Pigeon Creek in Queensland; and in the same colony, a correspondent informs me that there are a number of carvings on sandstone rocks, near the head of the Batavia river, York Peninsula. At Depuch Island, on the coast of West Australia, Capt. Wickham states¹ that he found "vast numbers" of carvings representing men, animals and other objects cut into the hard rock. In the Sydney district, New South Wales, carvings are found in many different localities, some being very rough, whilst others are creditably drawn, considering the rude tools at the disposal of the untutored artists.

The rock paintings of Australia are almost everywhere of a somewhat similar character, with but little variation either in

¹ "Journ. Roy. Geog. Soc.," xii, pp. 79–83. These carvings have hitherto been erroneously referred to as "paintings." In Smyth's "Aborigines of Victoria," i, p. 292, he says, "On Depuch Island, Stokes discovered a large number of paintings." Rev. J. Mathew, "Journ. Anthropol. Inst." xxiii, p. 42, says, "The paintings on Depuch Island are numerous."

the subjects treated or in the style of workmanship. The stencilled and impressed hands, the outlines of men and animals rudely drawn in various colours, appear to be universally distributed over the continent. On the Glenelg river, West Australia, Capt. Grey found some paintings¹ in 1838, a few of which, according to the plates given in his book, were highly coloured, and done in a superior style to native drawings found elsewhere. The majority of them were, however, "carelessly and badly executed." Mr. Joseph Bradshaw describes² some well-executed native paintings drawn in several colours, seen by him in 1891 on the Prince Regent river, about thirty-seven miles north-easterly from the place mentioned by Capt. Grey. It would be of immense service to the cause of anthropology if the Government of West Australia would endeavour to obtain authentic examples and full reports on the character of the drawings in the district mentioned. It would also be highly gratifying if this work were undertaken by private enterprise. The natives are still numerous in that part of the country, and would no doubt be able to render valuable assistance in collecting information in reference to these drawings.

Significance.—Although these rock drawings have been observed from the time of the earliest explorers, few men have been found competent to avail themselves of their opportunities to copy and describe them in detail, therefore very little work has yet been done in this part of the wide field of anthropological science, so that there is still a very large area of ground to be broken. Our present knowledge of these productions of native art is in a comparatively rudimental condition, and therefore it will be better not to attempt to suggest meanings to any of the groups of native drawings until a very much larger amount of information has been brought together than that contained in the scattered notes now at our disposal. This can only be done by collecting data from all parts of Australia. No individual Society could bear the expense of printing all the plates and descriptions necessary for this purpose, but all Societies which have for their object the diffusion of this kind of knowledge could assist by publishing descriptions and drawings which had not previously appeared in the Journals of other institutions.

The American Indians, in common with the prehistoric peoples of Europe, recorded important events by means of pictographs, some of which have been deciphered. When we know that drawings such as these by uncivilised nations of

¹ "Two Expeds. N.W. and W. Australia," i, pp. 201-206, and Plates.

² "Trans. Roy. Geog. Soc. Aust., Vic. Beh." ix, pp. 90-103, and one Plate. See also "Journ. Anthropol. Inst.," xxiii, pp. 42-52, Plates IV, V, VI.

all times, in various parts of the world, have ultimately been found to be full of meaning, it is not unreasonable for us to expect that the strange figures painted and carved upon rocks all over Australia will some day be interpreted. Perhaps some of these pictures are ideographic expressions of events in the history of the tribe; certain groupings of figures may pourtray some well-known legend; many of the animals probably represent totems; and it is likely that a number of them were executed for pastime and amusement.

Probable Age.—In the early times of colonisation in Australia, very little attention was paid to the habits and customs of the aborigines, hence the information now available respecting these rock pictures is very limited. Another difficulty which besets the investigator is that the blacks died out rapidly under the influence of civilisation, and the few who survived lived chiefly among the white people, and abandoned most of their former customs.

I was fortunate enough, however, to find an old and respected resident of the Wollombi District of New South Wales, who had seen the stencilling done by the natives, and who was able to give me particulars as to the manner in which it was performed, and also the date.¹ This was in 1843 or 1844, and it is only reasonable to suppose that the practice was continued for several years after that time. Mr. Curr, the author of the valuable work on "*The Australian Race*," in his remarks previously quoted in this paper, bears testimony to having seen the blacks executing these hand pictures. This book was published in 1886, and I understand that Mr. Curr had been collecting information for it for about ten years previously.

As far as my researches have yet gone, I have not been able to find any one who has seen the rock carvings done, but there does not seem to be any reason for assigning to them a remote date of execution. In examining carvings upon the same rock I have observed a great difference in their apparent age, showing that the work had been executed at different times. Some are comparatively distinct, but many have almost entirely disappeared—a line here and there only pointing to their former existence.

The Hawkesbury Sandstone on which these pictures are drawn is not very durable, even under the most favourable circumstances. It will, however, last a considerable time if kept dry, but when located in damp situations it crumbles away rapidly. Some sandstones are much finer and harder than others, which would considerably add to the durability of both

¹ "*Proc. Roy. Soc. Vic.*" vii (N.S.), p. 144.

paintings and carvings executed upon them, but none of them would remain for a very long period.

Drawings on the Ground, on Trees, &c.—Although the purpose of this paper is to deal with rock paintings and carvings, yet, as the widespread custom of drawing figures on the ground and on trees, as well as on the bodies and implements of the natives is so intimately connected with the subject I have in hand, I have deemed it desirable to make a short reference to that branch of aboriginal art.

In my paper on "The Bora, or Initiation Ceremonies of the Kamilaroi Tribe," published in the "Journal of the Anthropological Institute of Great Britain," vol. xxiv, pp. 411–427, Plate XXI, I have illustrated and described several kinds of aboriginal drawings on the ground. Some are drawn by first laying on the ground logs or bark forming the outline of the required figure, which was then covered over with loose earth. This way of building up the outline was only followed in very large figures; *loc. cit.*, p. 415, Plate XXI, Fig. 3. Other figures are composed entirely of the loose earth heaped up so as to resemble the horizontal image of the required object; *loc. cit.*, p. 416, Figs. 2 and 16. Another kind of drawing consists of figures of men, animals, and devices in various patterns, cut into the surface of the ground; a nick or groove from 2 to 3 inches wide, and about 2 inches deep, being cut into the turf along the outline of each. These grooves were cut with tomahawks, or flat pieces of wood on which an edge had been formed, *loc. cit.*, pp. 414–415, Figs. 5 to 8.

The specimens of native art found upon trees, representing men, animals, and other figures, are either chopped with the tomahawk, or are painted in red or white colours. In the former the object to be represented is outlined by a nick cut with a tomahawk into the bark or wood of the tree. For examples see the "Journal of the Anthropological Institute," vol. xxiv, p. 417, Plate XXI, Figs. 9 to 13, in which I have illustrated five trees marked by the aborigines. Mr. E. M. Curr, in his work "The Australian Race," ii, p. 301, states that he has "seen painted on a conspicuous tree, with red ochre or blood, the figure of a hand."

The ornamentation of the bodies of the natives is thus referred to by Mr. L. Schultze in describing the tjurunga festivals of the natives of the Finke river, South Australia: "The body is painted with fish-like figures. . . . Messengers are painted on the back with a sort of red disk formed of concentric rings, with four half-round disks, also consisting of concentric curves." "Trans. Roy. Soc. S. Aust.," xxiv, pp. 231 and 243.

Another kind of painting which may be briefly referred to, is

the native practice of stripping a sheet of bark, and ornamenting its inner side with various kinds of drawings in red ochre or pipe-clay, after which the bark was either hung on a tree, or laid with one end on the ground, and the other resting against a tree.

Images cut out of bark may also be mentioned. In my paper on the "Aboriginal Bora held at Gundabloui in 1894," published in the "Journal of the Royal Society of New South Wales," vol. xxviii, p. 113, I described two male figures cut out of bark, and fixed up against trees. In the same place I also described the figure of an iguana 3 feet long, a figure of the sun 2 feet in diameter, and one of the full moon 18 inches in diameter, all of which were cut out of bark and fastened to trees.—*Loc. cit.*, Plate III, Figs. 14 and 15.

I have in my possession a number of specimens of several kinds of aboriginal weapons made of wood, some of which are elaborately carved. Mr. Collins in his "Account of the English Colony of N.S. Wales," published in 1798, vol. i, p. 593, in speaking of the natives about Sydney, says "Most of their instruments are ornamented with rude carved work, effected with a piece of broken shell."

Conclusion.—In reference to the descriptions of the three Plates attached to this paper, it is hoped that they will be found sufficiently clear and full. All the figures are drawn to scale from careful sketches and measurements taken by myself. They have been copied with the greatest care, so as to faithfully represent the defects, as well as the merits, of the originals. The direction which each rock-shelter faces has been taken with a pocket compass, as this information may be found valuable for comparison, or for other purposes. The position of each cave and carving on the Government maps is stated in every instance, so that any person wishing to visit them can do so with great facility.

In Plate XVI, representing carvings, I have selected gigantic figures in all cases, so as to make a strong contrast with other carvings described by me in the Journals of the Royal Societies of New South Wales and of Victoria. These very large figures are, moreover, much rarer, and consequently more valuable than the smaller ones, and are found only in a few places.

It may be as well to state that photography is not practically applicable in the field for the purpose of copying these drawings from the rocks on which they are found. The native paintings are often found on greatly curved surfaces; some are on the roofs of caves, which are sometimes flat, and sometimes dome-shaped; others are partly on the roof, and partly on the cave wall; others again are in awkward positions 10 or 15 feet

from the ground. The foreshortening and other displacements due to perspective, in the circumstances indicated, would obviously be very great. Many of the paintings are so indistinct that they would not appear at all in a photograph, and the inability to reproduce them in the colours in which they are drawn upon the rock would be a serious objection. The surface of the ground at the front of these shelters frequently slopes away at a very steep grade, making it very difficult, and in some cases impossible, to set up a camera in a suitable position. The want of proper light in many instances would also be an insuperable obstacle.

The difficulties attending the taking of photographs of carvings on horizontal rocks are in many respects similar to those encountered in copying the paintings. It would, moreover, be necessary to erect a high stage above the flat rock, and then set the camera face downwards in the direction of the object to be photographed. Many of these rock carvings are of gigantic size, some of them exceeding 40 feet in length, and the outlines of many of them are barely distinguishable to a practised observer.

The camera is practically valueless in copying paintings or carvings except perhaps a few well-defined and favourably situated small objects. The mode of drawing from measurements, showing the position of every object in its proper colour, and drawn to scale, is the only way in which this work can be done to be of the greatest value for scientific purposes.

I have prepared this short paper on a subject which is one in which I have taken a deep interest, and if the labour and expense it has cost me has the effect of inducing others to carry on the investigation, and elicit further information respecting these rock paintings and carvings of the Australian race, I shall consider myself sufficiently rewarded.

DESCRIPTION OF PLATES XIV, XV, AND XVI.

Plate XIV.—Paintings.

Fig. 1.—The cave containing these paintings is situated in an escarpment of the Hawkesbury Sandstone, near the south-east corner of portion No. 15, of 2½ acres, in the parish of Tupa, county of Hunter. Its length is 29 feet, depth from the entrance to the back wall 18 feet 6 inches, and the height varying from 6 feet to 10 feet, owing to the irregularity of the roof. The floor consists of earth and ashes, and the cave faces S. 30° W.

On the back wall are delineated fifty-seven hands, forty-five of them representing the left hand, and twelve the right, all executed in what I have described as the "stencil method," and

in white colour. About half a dozen of these show part of the arm nearly to the elbow. Intermingled with the hands are also two aboriginal stone tomahawks, stencilled in white colour on the wall, in a similar manner.

There are three drawings in white colour, which may have been intended to represent the sun. The largest of these has nineteen rays of unequal lengths, and irregularly arranged, the greatest diameter across the rays being 5 feet 6 inches. Another has twenty-four rays, more uniform in length and arrangement than the last described, and having its greatest diameter 5 feet 4 inches. The remaining one of these drawings has eighteen rays irregular in length and arrangement, like the first mentioned, having a right hand stencilled on the disc at its centre. The total length of the back wall occupied by these paintings is 29 feet, and every object is shown in its correct relative position on the plate.

The smoke stains on the roof, and the ashes present in the soil on the floor, bear evidence to the cave having in former times been used as a camping place by the aborigines. It is distant about a quarter of a mile easterly from Putty Creek, in which there is permanent water.

Fig. 2.—The paintings here shown are found in a small cave in a sandstone rock within portion No. 44 of 40 acres, in the parish of Auburn, county of Northumberland. Its length is 12 feet, depth 7 feet, height 5 feet 6 inches, and it faces N. 15° E.

The principal painting in this cave is similar to the three drawings in Fig. 1 last described, and has fourteen rays fairly regular in arrangement, with the horizontal rays a little longer than the vertical ones. A small ledge projects just below the centre of the figure, which gives it the appearance of rising out of the rock, which might seem to favour the conjecture that these figures were intended to represent the sun, and that the present picture shows that luminary in the act of rising or setting.

There are altogether twenty-one hands visible in this cave, some being on the back wall, and others on the roof; but I have only shown two of the most remarkable, representing a right and a left, perhaps belonging to the same individual. These are stencilled in such a manner that the junction of the two separate drawings is not discernible, and the wrists appear to join each other. Three of the other hands have the arm as far as the elbow depicted. All the paintings in this cave are in white colour. Before any of the drawings were made, it is evident that the roof and wall were blackened either by smoke or by some colouring matter being applied to it, because the space

within and around the stencilled hands is quite black, causing the white colour to show very conspicuously. There is permanent water in the Macdonald River, less than a quarter of a mile to the east of the cave.

Fig. 3.—This curious figure of a man is drawn in red on the back wall of a cave 33 feet long, 10 feet deep, and averaging about 6 feet high at the entrance. It is situated about 80 yards from the right bank of Cutta Muttan Creek, in which the water is permanent, and about a mile westerly from portion No. 63 of 40 acres in the parish of Lockyer, county of Northumberland. In native drawings of men I have frequently found the penis very much elongated, in some instances as long, or longer, than the legs. The triangular projections on each side of the head may be intended to represent the hair stretched outwards from the head. Compare with the head of the woman shown in Fig. 2, Plate XVI.

Fig. 4.—In order to give a specimen of the "impression method" of drawing, I have here reproduced part of Fig. 2, Plate VIII, from the "Proceedings of the Royal Society of Victoria," vol. vii (N.S.), illustrating a paper on "Aboriginal Rock Paintings and Carvings in N.S. Wales" which I contributed to that Society last year. I have been obliged to do this because impressed hands are not plentiful, and I have been unable to obtain original drawings for the present paper.

The plate shows thirteen impressed hands, one stencilled hand, and a waddy 4 feet long, also stencilled. A circular object, 3 feet by 2 feet 9 inches, with a line leading from it to the waddy, completes the paintings shown in this Fig., which are all done in red colour.

The cave in which these drawings appear is 28 feet long 18 feet high, 11 feet from front to back, and faces the north-east. It is on the end of a rocky point reaching into a sharp bend in Cox's Creek, in which water is permanent, and is about 2 chains from the eastern boundary of portion No. 65, of 40 acres, in the parish of Coolcalwin, county of Phillip.

Fig. 5.—The cave containing this drawing of the upper part of a man is 26 feet long, 10 feet high, and 13 feet deep. It is situated within portion No. 40, of 40 acres, parish of Lockyer, county of Northumberland, and faces N. 20° E.

This drawing shows a man as far as the waist. The eyes and mouth are delineated, but not the nose. The whole of the figure is drawn in red colour, with the exception of the mouth, which is in white. A ledge of the rock projects outwards a few inches from the cave wall at the man's waist, at which the drawing terminates, giving him the appearance of coming up out of the rock. In a few other instances I have found that the

natives have delineated iguanas, snakes, men, and other objects, coming up from, or disappearing behind, a ledge in this way. Cf. Fig. 2, Plate XIV.

For this Fig., and also for Fig. 3 of this Plate, I am indebted to Mr. W. J. Enright, B.A., of West Maitland, who takes a great interest in this subject. In both caves there are several other drawings besides those I have shown in this paper.

Plate XV.—Paintings (continued).

Fig. 6.—This large cave is 92 feet long, 27 feet deep from the front inwards, the height in front being about 15 feet, gradually decreasing inwards to the back wall, where it is from 6 feet to 9 feet, owing to the inequalities of the floor. It faces the north, and looks out on a rocky gully about 5 chains northerly from it, in which there is plenty of good permanent water. The roof is stained with smoke, and the shelter appears to have been used formerly as a camping place by the aborigines for many generations. The floor consists in places of soil, and in others of sandstone rock, both being covered with a thick layer of sand formed by the disintegration of the rock forming the walls and roof.

This cave or rock shelter is situated at the base of a precipitous escarpment of Hawkesbury Sandstone, on the southern side of a gully which runs easterly into Broosalum Creek, a tributary of Cowan Creek. It is about half a mile to the east of the road from Pymble to Cowan, and about three-quarters of a mile southerly from Jacomb Trigonometrical Station, parish of Gordon, county of Cumberland.

The drawings in this cave are both numerous and interesting, and are scattered over 57 lineal feet of the back wall. The Plate shows every object in its correct relative position, and in its proper size, exactly as it appears upon the rock. The great length of wall over which the drawings extend, made it necessary for me to divide the Plate into two sections, one commencing where the other leaves off—a line A B being drawn on each to show the connecting point.

To the left of the spectator on entering the cave are nine figures of men, one woman, and five kangaroos or wallabies, of different sizes, all outlined in black and shaded within the outlines, in the same colour. Intermingled with these are the figure of a man with an abnormally long body and short legs and a kangaroo, drawn in outline only. Farther to the right is a kangaroo drawn in solid black colour, and farther on is the figure of a woman in black outline. Looking at the left hand side of the lower section of the plate, we see two kangaroos running—apparently a mother and her young one—outlined in black; and farther on is an animal which is rather hard to

identify, but which may have been intended for an opossum or a native cat. Still farther to the right is part of the figure of a kangaroo, the remainder having disappeared owing to the natural decay of the rock surface. The last group in the cave is one of unusual interest, depicting a female kangaroo with a young one just in the act of jumping out of her pouch.

Returning again to the upper left hand corner of the Plate, there is delineated what appears to be part of a native weapon, done in white stencil, and executed subsequently to the black figures across which it is drawn. Scattered at intervals along the entire length of the cave are twelve hands stencilled in white, only one of which represents the right hand. There are also two unfinished figures near the black kangaroo. This completes all the drawings delineated on the Plate.

A large mass of the cave wall, about 24 feet long by 4 feet wide, has weathered away, forming a large cavity in the rock, no doubt carrying with it numerous paintings of different objects. Besides this there are several places, which I have marked on the Plate, where many figures have almost entirely disappeared, owing to the disintegration of the rock.

Plate XVI.—Carvings.

Fig. 1.—This gigantic figure of a man¹ is carved on a flat rock of Hawkesbury Sandstone on the top of a spur about half a mile north-westerly from Cooper Trigonometrical Station, parish of Frederick, county of Cumberland. The height from the left heel to the top of the head is 15 feet 2 inches, and the width across the body 4 feet 6 inches. There is a belt round the waist, a necklace, and bands round the arms and thighs. Four ray-like lines, the longest of which is 13 inches, rise from the top of the head, which may be intended for ornaments stuck in the hair. The eyes are shown, but the mouth and nose were either not drawn, or have disappeared by the weathering of the rock. The pendulous projections on each side of the head may represent the termination of the hair, or may be intended either for the ears or for ornaments attached to them. The mass of rock on which this figure is found is about half an acre in extent, and has a gentle dip towards the east. There are some dotted lines on the body, most of which, owing to the wasting of the rock, are too indistinct to copy. I have, however, been able to show two of the plainest of them.

Fig. 2.—This representation of a woman is 11 feet 3 inches from the top of the head to a point on a level with the feet, but if the legs were not so much spread out, the height would

¹ Among the carvings described by Capt. Wickham on Depuch Island were several human figures. "Journ. Roy. Geog. Soc.," xii, p. 82.

be about 11 feet 9 inches, or 12 feet. This is very much the largest figure of a woman yet observed by me among native carvings. The width of the body at the belt is 3 feet 7 inches, and from tip to tip of the mammæ measures 5 feet 6 inches. There are bands around the thighs, and a necklace, similar to those in Fig. 1. The eyes and mouth are shown, and the projections on each side of the head are probably intended to represent the hair. Extending from the belt upwards towards the head are five broken or dotted lines reaching to the shoulders. This very interesting figure is carved on a flat rock about two acres in extent, and sloping gently towards the south-east, in the parish of Spencer, county of Northumberland. This rock is on an old bridle track from Mangrove Creek to the Hawkesbury River, and is on the top of the range dividing the waters of the streams mentioned.

Fig. 3.—This large carving of a male kangaroo¹ is found on the same flat rock as Fig. 2, and measures 12 feet 4 inches from the tip of the nose to the end of the tail—the width of the body at the widest part being 3 feet 11 inches. Two ears and an eye are shown, and there is a band around the hinder part of the body. Partly covering the animal's hind leg is a shield² 3 feet 5 inches long, and 1 foot 3 inches across the middle, with one longitudinal and two transverse bars cut upon it. This may refer to some tribal legend about the shield, or the latter may have been drawn there merely on account of the suitability of the surface for the purpose.

Fig. 4.—This figure is carved on the same large flat rock as Fig. 1, and is intended to represent an emu sitting on its nest containing ten eggs.³ The native artist does not appear to have been able to overcome the difficulty of showing the leg bent under the bird in the usual sitting posture, and has therefore drawn it straight, which gives the bird the appearance of lying on its side, with its leg stretched out. From the point of the bill to the farthest part of the croup measures 8 feet 6 inches, and the average size of the eggs is nearly 8 inches long, by 6 inches through. In my paper on "Australian Rock Pictures" published in "The American Anthropologist" (Washington, 1895), vol. viii, pp. 268–278, Plate II, Fig. 1, I have illustrated a group of six emus, all close to each other,

¹ The figure of the kangaroo was also observed by Capt. Wickham among the carvings on Depuch Island, on the western coast of West Australia. *Loc. cit.*, p. 82.

² Captain Wickham mentions a shield among the carvings seen by him on Depuch Island. *Loc. cit.*, p. 82.

³ Capt. Wickham, in his description of one of the carvings on Depuch Island, says: "it is probably meant to represent the eggs of the emu as laid in the nest." *Loc. cit.*, p. 82.

carved on the same large rock. In Figs. 2 and 3, Plate I, of that paper I have also shown two emus painted on the walls of rock shelters, one of the emus being apparently sitting on the nest.

Fig. 5.—This is another carving of an emu¹ measuring 9 feet 6 inches from the point of the bill to the tail. It is situated on a southern continuation of the same large rock as that on which Figs. 1 and 4 appear. There is a band around the leg, another around the neck, and an eye is shown. The leg is slightly bent at the joint, and is not straight like the leg of Fig. 4. Within the outline of the emu is the representation of a shield 3 feet 6 inches long and 1 foot 3 inches wide, with a longitudinal and a transverse bar. My remarks in regard to the presence of a shield in Fig. 3 may be read in connection with this one.²

Fig. 6.—This grotesque carving, which appears to be an unfinished figure of a man, is found on the same large mass of rock as Figs. 2 and 3. From the top of the head to the left heel measures 16 feet, and the width across the body at the belt is 4 feet 2 inches. Only one side of the head is completed delineating the hair as in Fig. 2: and from the top of the head project seven lines, each about 2 feet in length, resembling those seen in Fig. 1. I very carefully examined the rock, under favourable conditions, and am of opinion that no other lines except those shown ever existed.

I know of another somewhat similar carving, about the same size, in another locality, which I intend shortly to visit, and take full particulars, after which I hope to be able to make some interesting remarks in regard to both drawings.

Fig. 7.—The large fish here represented is carved on a flat rock of Hawkesbury Sandstone, sloping slightly towards the east, and is about half a mile in a south-westerly direction from Jones Trigonometrical Station, parish of Manly Cove, county of Cumberland. It is rather difficult to determine which end of this fish is intended for the head, but I am inclined to think it is at the end B, and that it was possibly drawn to denote a very large shark, with its mouth open; or, perhaps this carving may delineate some marine monster of the artist's imagination. The total length of the fish from A to B is 33

¹ The emu is mentioned by Capt. Wickham as having been seen by him among the Depuch Island carvings. *Loc. cit.*, p. 83.

² Figs. 1, 4 and 5 of this Plate have been described in a paper on "The Aboriginal Rock Pictures of Australia" contributed by me to the Royal Geographical Society of Australasia, Queensland Branch, and published in their "Proceedings," vol. x, pp. 66-70, and are therein shown as Figs. 1, 13 and 3 respectively, of Plate III.

feet 10 inches, and the diagonal measurement from tip to tip of the two longest fins is 21 feet 9 inches.

Fig. 8.—This representation of a female kangaroo is carved on the same flat rock which contains Figs. 1, 4 and 5. There is a band around the shoulders, and also around the tail. One ear and an eye are delineated, and the measurement from the tip of the nose to the end of the tail is 10 feet 7 inches. The animal is represented in the act of jumping, and is very well proportioned.

JUNE 11th, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The presents that had been received were announced and thanks voted to the respective donors.

Dr. HEGER of Vienna was introduced to the Meeting by the President.

A lecture on the "Ethnography of British New Guinea, illustrated with the optical lantern," was delivered by Prof. A. C. HADDON.

Prof. HADDON commenced by stating that the ethnography of our largest tropical insular protectorate is still largely unknown, although thanks to the labours of the wise and energetic administrator, Sir Wm. MacGregor, and of the intrepid missionary, the Rev. James Chalmers, much information has recently come to hand. The object of the lecturer was to bring visually before his audience some of the ethnographical data which are now available for study. The people fall into two distinct groups, the true Papuan of the Fly River and Papuan Gulf districts and of the mountain ranges. These are a uniformly dark, frizzly-haired people, with elongated skulls, most of whom scarify their skin. Sometimes numerous families live in immense houses, and there appears to be a good deal of club-life among the men. Very characteristic are the sacred or club-houses, often called temples, as is also the occurrence of sacred ceremonies at the initiation of lads into manhood; masks are worn at these functions and the bull-roarer is swung and shown to the youths. The stone club is used all over British New Guinea, but the bow and arrow is confined to the Fly River and Papuan Gulf districts. The

natives of most of the coast of the south-east peninsula and of the archipelagoes beyond appear to belong to an immigrant stock of which the former may have come from the New Hebrides, and the latter from the Solomon Islands. They are usually lighter in colour than the true Papuans, often with broad skulls; they tattoo their bodies and live in smaller houses. Initiation ceremonies with the concomitant employment of masks and the bull-roarer are absent. The bow and arrow are replaced by the spear, and shields are of universal occurrence. These natives have only recently learnt the use of tobacco, but they are inveterate betel chewers; the use of Kava is unknown. Unlike the Papuans these people make pottery. The western Papuans are a totemistic people, and animal forms are frequently represented in their decorative art. The coast Melanesian immigrants have a poor decorative art, devoid of animal or human motives, whereas the island Melanesian settlers have a luxuriant art with rich scroll designs derived from the frigate bird, which is the sacred bird of the West Pacific.

Messrs. S. H. RAY and J. EDGE PARTINGTON took part in the discussion.

JULY 1st, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The presents that had been received were announced and thanks voted to the respective donors.

The President announced the death of Prof. T. H. HUXLEY, and called attention to the great loss the Institute had thus sustained.

A lecture, illustrated with the optical lantern, on "Visits to the Hadramaut and Dhofar, the Frank-incense and Myrrh countries of South Arabia, with a description of the Bedouins of both districts and their different characteristics," was delivered by Mr. J. T. BENT.

Miss BUCKLAND and Drs. GARSON and LEITNER took part in the discussion.

ANTHROPOLOGICAL MISCELLANEA AND NEW BOOKS.

The "Central Provinces of India Census."

THE report of the Census returns of 1891, for the Central Provinces of India, presents us with many interesting facts.

The provinces dealt with, occupying a central position almost surrounded by native states, comprise an area of nearly 116,000 square miles, divided into British and Feudatory States, with a population of 12,944,800, of which 10,784,294 are found in British territory and 2,160,511 in the Feudatory States; being in the ratio of 124 persons to the square mile in the British districts, to 73 in the feudatories.

The most prominent physical feature of the province is the range of the Satpuras, crossing it from east and west and dividing the Nerbada valley in the north from the plains of Nagpur and Chhatisgarh in the south. Beyond the Nerbada valley and separated from it by the range of the Vindhya, lie the districts of Saugor and Damoh. For census purposes the province is divided into seven parts, the Vindhyan division, the Nerbada valley, Nimar, the Satpura districts, the Nagpur plain, Chhatisgarh, and the Uria country; whilst the administration divisions are four in number, subdivided into eighteen districts. The Jubbulpore division includes Saugor, Damoh, Jubbulpore, Mandla, and Seoni. The Nerbada division; Hoshangabad, Narsinghpur, Nimar, Betul, and Chhindwara. The Nagpur division; Nagpur, Wardha, Chanda, Bhandara and Balaghat. The Chhatisgarh division; Raipur, Bilaspur, and Sambalpur.

The hill districts rising to a height of 2,000 feet above sea level are usually healthy, but where there is jungle, malarial fever and cholera are rife. Wheat, rice and other food grains, cotton and linseed are extensively cultivated. The Nerbada valley has been described as "green from end to end with wheat," and the rice of Patna, one of the Feudatory States, is known everywhere.

The population, therefore, is largely agricultural, so that of the 10,784,294 under British rule, 7,173,480 are returned as living by "Pasture and Agriculture," the proportion of the sexes thus employed being nearly equal, and young children both male and female being sent out to tend cattle.

British rule over the whole of the Central Provinces only dates back to 1864, but as early as 1818. Saugor and Nerbada had become British territory, the remaining states having been gradually absorbed. Prior to this a series of wars between various native

chiefs desolated the country. Of the early inhabitants of this portion of India the Gonds would appear to have been the aborigines, but how long they had been in possession of the country prior to the Aryan invasion cannot be determined. One curious fact is however recorded, that "the conquerors were swallowed up by the conquered, the lower race assimilated to itself the superior element, for as time goes on certain Gond kingdoms replace all other dynasties and divide between them the whole of Gondwana."

In 1737 they were, however, conquered by the Marathas, who held the country until it passed under British rule.

The Gonds with their allied tribes still appear to be the most numerous of the many native races in the Central Provinces, being reckoned at 2,258,824 in the British districts, and 495,293 in the Feudatory States. It would occupy too much space to enumerate all the Gond tribes, but we must notice a few peculiar characteristics of some of them. The Bharias are described as among the wildest of hill tribes, of aboriginal religion but speaking only Hindi. The Darwe or Naik Gonds of Chanda, appear to have been employed as soldiers by the Gond kings, and still prefer military to agricultural work. The chief peculiarity of the Gaitis is the setting aside of a house in each village as the sleeping place of unmarried men the same provision being made in some villages for the unmarried women. This custom prevails also among the common Gonds of Kanker, and is of especial interest as being found also in New Guinea. Several of the tribes are bards and minstrels, and others are dancers, the women among the Bhimas and the men among the Ojhas; the latter putting on special attire and wearing anklets with belts.

The Raj Gonds are the highest class Gonds, and are according to Forsyth the result of the alliance between the Rajput adventurers and the Gonds in the days of Gond rule, showing an admixture of Hindu and aboriginal blood. These profess the Hindu religion, and wear the sacred thread, which is also the privilege of some of the Gonds of Bastar. The Marias are said to be the purest type of Gonds, and perhaps the root from which the other Gonds have sprung. They appear wilder and less civilised, but stronger and more agile than other Gonds; wear little clothing; shave the head, except a knot gathered up behind or on the crown. The young men wear red and white bead necklaces, sometimes worked into a band or collar of an inch or two in width, also brass bracelets, and sometimes a belt of cowries. A small iron knife without a sheath is always stuck in the belt behind. They sometimes wear rough sandals of buffalo hide, and a hatchet or bow and arrows hanging from the shoulder completes the costume. They are described as being timid, quiet, docile, and light-hearted, and bear a singular character for truthfulness and honesty.

The Gonds, however, with their subdivisions, form but one of the Forest and Hill Tribes of the Central Provinces. The wildest of all these are the Baigas, who are reported as still almost in a

state of nature, very black, but less negretto in feature than other wild races; upright, slim, and very wiry, with long, tangled, coal-black hair, almost destitute of clothing, but sometimes wearing a coarse cotton sheet cross-wise over the chest, armed with bow and arrows, and a keen little axe hitched over the shoulder. They build little bamboo wicker-work huts perched like an eagle's eyrie on a hill top or ledge of rock, and eke out the fruits of the earth by the pursuit of game. Truthful and honest almost to a fault, and courageous enough even to attack the tiger. They possess a patriarchal form of self-government, so that their disputes are settled by their elders without appeal.

Such is the description of the Baigas of the Maikal range as given by Forsyth, but the Baigas of Mandla include some highly-civilised tribes, such as the Binjhvars, from whom the priests of the tribe and of the Gonds are derived.

The Binjhvars are particular with regard to food and will not eat with outsiders, whilst the Bharotias and Narotias will eat almost anything except beef. Many of these tribes are distinguished by their mode of shaving the head or wearing the hair. The Balag returned as of the Hindu religion, whilst the others are animistic.

The Bhils, another wild race almost confined to the Nimar district, were formerly Mussulmans, but have returned to a semi-Hindu semi-elemental religion, and are "a miserable lot, idle and thriftless, and steeped in the deadly vice of opium eating."

The Halbas are a very numerous tribe, apparently of Gond descent, but Hindus by religion. "In Bastar they do not eat the flesh of cows or of swine, and wear the sacred thread as a caste." In Bhandara they eat swine's flesh, and do not put on the sacred thread.

The *Khonds* are the predominant race in the Uria country Patna and Kalahandi; they admit into their community members of other stocks with the exception of some of the debased castes, and to this practice Mr. Risley thinks may in some degree be due the fine physique of the race.

The *Korkus* and the *Kols* are also numerous in the Central Provinces, and of all these races there are numerous sub-divisions, rendering the ethnology of this part of India a most intricate problem, enhanced by the kaleidoscopic shifting of the various tribes in the past, by present migrations, and by that curious system of caste which seems to blend together and yet to separate the various tribes even more than race.

The castes in the Census Report are divided into classes, each class having many sub-divisions. Thus *Class A. Agricultural*—includes I—Military and dominant agricultural castes. II—Other agricultural castes; (a) cultivators; (b) cattle breeders and graziers; (c) field labourers. III—The forest and hill tribes.

Class B. Professional includes—Priests, devotees, temple servants, genealogists, writers, astrologers, musicians, dancers, &c.

Class C. Commercial.—Traders, carriers, &c.

Class D. Artisans and Village Menials.—Goldsmiths, barbers, blacksmiths, carpenters, masons, turners, brass and copper-smiths, tailors, grain parchers and confectioners, perfumers and betel leaf sellers, weavers, washermen, cotton-cleaners, shepherds and wool-weavers, oil pressers, potters, glass workers, gold washers, iron smelters, fishermen, boatmen, &c., distillers, butchers, leather-workers, village watchmen, scavengers.

Class E. Vagrants, Minor Artisans, Performers, &c.—Grindstone makers and stone quarriers, earth-workers and stone dressers, mat and cane workers, hunters and fowlers, miscellaneous, tumblers and acrobats.

Class F. Races and Nationalities.—Asiatic races of non-Indian descent, non-Asiatic races, Eurasians and native Christians.

Of these we have already passed under review some of the hill and forest tribes included in Class A, as being of especial interest to anthropologists, and we must now endeavour to say a few words with regard to some of the more interesting of the other castes and their peculiarities. The Gujars (A) are a fine manly race of cultivators. The Mundal Gujars take off their turbans and expose their shaven heads when they eat, whilst the Lilorhas eat with the turban on. The Nimar Gujars are famed for their breed of fine trotting bullocks.

The Marathas and Rajputs are the great military tribes. The Powars, a subdivision of the Rajputs, rank high as agriculturists and are very skilful in irrigation works.

The Káchhis, noted for the excellence of their garden crops. Mr. Crooke inclines to the belief that the Káchhis have at least a totemistic connection with the Kachhwáha tribe of Rajputs, who take their name from *kachhwa* the tortoise, which was probably the tribal symbol.

The Kaonras trace their descent from the Kauravas, one of the two legendary families of the Lunar race. They wear the sacred thread, burn their dead and generally observe the Hindu religion, but differ from strict Hindus in that they eat flesh and allow their widows to re-marry.

The Mánas are said to have ruled the country prior to its occupation by the Gonds. They are of Gond type, and are hardy, industrious and truthful.

In Class B, the most important caste is that of the *Brahmins*, who are divided into Panch-Gaur or northern race and Panch Dravid or southern race; by far the larger proportion belonging to the former, but in each there are numerous sub-divisions. The strongest division of the Panch-Gaur Brahmins are the Kanaujias dwelling round Cawnpore and Benares. Another Brahmin tribe the Sanaurhias are the well known criminal class of Bundelkhand. These according to Mr. Crooke are strict Brahmins wearing the sacred thread which is renewed yearly at the Rakshábandan, are total abstainers from flesh and wine, never destroy life in any form, observe the same ceremonies connected with births marriages and deaths as other Brahmins;

worship the cow and the serpent, and when sick employ only Brahmin sorcerers to expel the evil spirit of disease.

Among devotees may be mentioned the Aghoris, who extort alms by eating human ordure, bones, or other filth. They are now rapidly disappearing. The Basdewas who are "a sect of 'merry beggars' known by wearing a cap of peacock's feathers. The stems are bound together and surmounted by a sham snake, the feathers shading the face. They beg only in the morning; each man has his beat which another Basdewa dare not infringe unless bareheaded."

A branch of Class D—Artizans, among the barbers are called Maháwats, who do ear cleaning and cupping, the latter by means of a cow-horn with a hole at the pointed end through which they exhaust the air. Among the weavers the Halbia are the makers of fine white cotton cloths with silk borders, for which the towns of Nagpur and Umrer are famous. The Patwas string necklaces and make waistbands of silk and cotton thread.

A curious superstition is recorded of the gold and diamond washers. They avoid the spot where they have met with luck, believing that he who finds gold will be childless.

The method of smelting iron by the tribes following that profession is interesting. They have first to prepare the charcoal and collect the ore. These they place together in a clay furnace about 3 feet high, a regular current of air is kept playing on the furnace from a primitive pair of bellows worked by the feet. When the ore is smelted the iron comes rushing out in a lava-like stream from the crevice at the bottom of the furnace. It is then hammered and made into broad bars fit for sale.

The Dhimars and Kahárs who belong to the fishermen caste are also water carriers. "All the northern castes of Hindus, including Brahmins, take water from the Kahárs, but in the southern districts even the common Hindu castes refuse to drink from their hands."

Class E includes vagrants and what are known as criminal tribes; although the latter number among them some who are well-behaved, and it is remarked that the Bágris, who are largely criminal along the Bundelkhand border, are not so in Seoni, whilst the Minas of the Nerbada valley are settled cultivators, but the few who are found in other districts are probably of the northern stock which in Upper India is almost invariably criminal.

The various religions professed by the innumerable castes and tribes form a very interesting subject of inquiry. The Hindus form the great mass of the inhabitants of the Central Provinces numbering about four-fifths of the population, whilst the aboriginal religion classed in the Census returns as *animistic* is still professed by 78 per cent. of the Gonds and Khonds and in a less proportion by all the native tribes, the average in some rising to 66 per cent., whilst in others as the Halbas numbering 97,913 it is only 6·2, the great majority of these professing Hinduism, which however blends almost inseparably with the aboriginal religion;

and here it may be well to give some idea of aboriginal beliefs as quoted in the Census returns from the description of the late Captain Forsyth.

Treating of the Gonds, Captain Forsyth says they have passed through the earlier stages of belief and are entering on that of idolatry; but that the objects of worship of each new stage form additions to those formerly revered, instead of supplanting them. The foundation of their creed appears to be a vague pantheism, in which all nature is looked upon as pervaded by spiritual powers to be propitiated by simple offerings. Every prominent mountain-top is the residence of the Spirit of the Hill, who must be satisfied by an offering before a *dhya* can be cut on its slopes. A grove of typical trees is left standing as a refuge for the woodland spirits when clearing a jungle. When a field is sown, and again when it is reaped, the god of the rice-fields (*Khodo Pen*) has to be satisfied. The tiger god has a hut built for him in the wilderness, and the goddesses of small-pox and cholera receive offerings. The ghosts of the deceased have to be laid with certain ceremonies. These consist of conjuring the ghost into something tangible, as into the body of a fish or a fowl chosen by omen. The object, whatever it is, is then brought to the house of the deceased, and propitiated for a certain time, after which it is formally consigned to rest by burial. The spirits of persons killed by wild animals are especially malignant, and are laid with much ceremony. None of these powers of nature are represented by idols, nor have they any particular form of worship. They are merely localised by some vague symbol; the mountain god by a daub of vermillion on some prominent rock, the tree-god by a pile of stones thrown round the stem of a tree or so on. To these the simple savage pays his devotion by a prostration, or by the offering of a handful of rice or an onion, with more elaborate ceremonies at certain seasons.

In the next stage fetishes are added to the list of powers. The principal of these is an iron spear-head called *Phársá Pen*, and he is supported by the Bell-god the Chain-god, a god composed of some copper money hung up in a pot, shapeless stones, and many other objects. To this stage appears to belong the medicine man and dealer in witchcraft who still possesses considerable power among the tribes. These medicine men can hardly be called priests and are not an hereditary caste. Their business is to exorcise evil spirits, to interpret the wishes of the fetish, to compel rain, and so forth. Some of them seem to have acquired the power of throwing themselves into a sort of trance in which they are visited by the deity.

In a still more advanced stage the Gonds have resorted to hero worship, but it is curious that all their deified heroes are of purely Hindu derivation. The chief are *Bhima*, one of the five *Pándú* brethren, represented by his mythical club, either in stone or wood, *Hardyál*, a *Rájput* hero of much later date, and many others.

Lastly come the recognised divinities of the Hindu pantheon, the malevolent being preferred to the benevolent; Vishnu is scarcely recognised, except in his one terrible development of Nar singha, or the Man-Tiger; whilst Siva, the Destroyer, with his formidable consort Kali, and son Bhairava, are the favourite objects of reverence among the more advanced of the tribes. These are represented by rude idols, Siva himself in his usual phallic form; and a Brahmin in many cases officiates at their shrines. Here for the first time we find mythology—the science of priests at work. In their earlier stages the tribes had no priests, no hierarchy of gods, and consequently no mythology. Now legends are invented to connect the tribes and their earlier gods with the great web of Hindu fiction, and bring them within the dominion of caste and priesthood.

Captain Forsyth then treats of the religion of the Korkus, which he believes to be purer than that of the Gonds, since although the powers of nature are equally adored, such as the tiger-god, the bison-god, the hill-god, and the deities of small-pox and cholera, these are all secondary to the sun and the moon, which among this branch of the Kolarian stock, as among the Kols in the far east, are the chief objects of adoration. The sun and the figure of a horse (a Scythian emblem of the sun) are carved on wooden posts and receive sacrifices. They also sacrifice to the manes of their dead, but only for a certain period to lay them. They are not so addicted to sorcery and witchcraft as the Gonds and Baigas, and have only a few glorified heroes, but their semi-Hindu chiefs worship Siva and his companions. Forsyth speaks of the gradual fusion of the aborigines with the Hindus, but it would appear that in many cases the Hindus settled among aboriginal tribes have to a certain extent adopted the animistic beliefs of the hill tribes.

Other recognised native religions are those of the Sikhs and Jains, Aryas and Brahmos, Buddhists,¹ Parsis, Jews, Christians and Mussulmen; the latter numbering 319,479, whilst the Christians are given as 13,318, of whom 4,828 are Europeans, 2,202 Eurasians, and 6,278 natives; the latter have increased in nine districts, and decreased in the remaining nine.

Of the various sects into which all these religions are divided and sub-divided it is impossible to speak. The aboriginal and Hindu religions seem to be on the increase both in the British and Feudatory States, but much more so in the latter than in the former, the native Christians have also increased in numbers, but not in the same proportions, and the rates of all the religions vary in the several districts through migrations, which also cause a disproportion in the sexes in some of the states, although other causes not easily understood appear to be at work to induce the birth of a larger proportion of females among the aboriginal tribes, and of males among the Jains.

¹ The Buddhists only number 325 and these are mostly Burmese prisoners, and 11 are Chinese.

As in Europe, females appear to be longer-lived than males, but neither sex attain so great an average of years as among Western nations.

Child marriage prevails chiefly among the Hindu castes, but is slightly on the decrease except in Mandla. Of the statistics of various infirmities we must treat very briefly, although the subject is full of interest. One person in every 6,364 is returned as of unsound mind, the average being greater in the British than in the Feudatory States, but there is a satisfactory decrease since the last census; drink and noxious drugs being the chief predisposing causes. There is a great decrease in the numbers suffering from blindness. Deaf-mutes are also less numerous. The number of lepers is specially great in the Wardha district, but has decreased in other parts of the province, the average being one in 2,014 in British territory, and one in 1,716 in the Feudatory States, and in proportion of sex two men are lepers to one woman; the greater average being among the lower castes and aboriginal tribes, whilst blindness is more common among the higher castes.

The aboriginal tribes are largely illiterate, one reason for this is that Brahmins will not teach low-caste boys. They object to receive anything from their hands, the slates being pushed along the ground to and from the master, and if the latter should accidentally touch a boy, the master must bathe before he is pure. Hence the teacher is generally a Mahomedan, and after a time the low-caste boys disappear, and their place is taken by Mahomedans. Females, of course are almost illiterate except among the Parsis, of whom 56 per cent. of the women can read and write.

Many more interesting facts might be culled from these Census returns, but our space is exhausted.

A. W. BUCKLAND.

Die Philippinen. II. Negritos.

By Dr. A. B. MEYER.

THIS splendid monograph, the ninth volume of the publications illustrating the treasures of the Royal Ethnographic Museum of Dresden, is in many respects the most interesting of the whole series. It contains the discussions of topics of very great interest, and is based on the researches of the author himself and those of Semper, Wallis, Schadenberg, Baessler, and others. It is especially important and well timed, as so much that is inaccurate has been written of late years concerning the Negritos, in connection with the newly awakened interest in the pigmy races of the world.

The work consists of four parts: 1st, A description, with copious illustrative notes, of the ten large plates of photographs of the clothing, weapons, &c., of the Negritos of the Philippines. 2nd, Ethnographic notes on the race. 3rd, A vocabulary of Negrito speech, and a discussion of its affinities by Professor Kern of

Leyden; and 4th, a sketch of the distribution of the Negrito, both within and without the Philippine Islands.

In the first part there are some objects which are noteworthy. Among the articles of clothing figured there is a girdle whose provenance is unknown, made of locks of human hair interwoven with red cotton threads. The hair is that of a Malay, long and straight, not the frizzly hair of the Negrito. There are also several illustrations of the peculiar Negrito comb. The peculiar fashion of cutting short the hair on the back of the head, which is shown in one of the plates, allows of this comb being worn in a peculiar way, inserted horizontally from behind into the hair in front of the tonsured space, so that its flat part projects backwards like a shelf. It is interesting that combs of a similar pattern are in use among the Semangs of the Malayan Peninsula, another Negrito race.

In referring to a cigar mouthpiece from the Philippines Dr. Meyer notes that tobacco smoking is begun early by these people; he has seen suckling children smoking cigars. The same was noticed by Burbage in the Sooloo Archipelago.

The ornaments of the Negritos do not call for much notice; the peculiar leg rings of interwoven swine's bristles, the cloth rolls inserted into the ears, &c., are illustrated. Among the articles of their manufacture there is one extremely ingenious basket made of the node and internode of a large bamboo; the node forms the bottom of the basket, and the wall of the internode is split down nearly to the node into strips, with which are interwoven horizontally thin slips of bamboo, the whole thus making a fish-basket fusiform below, then narrowing upwards and widening finally to its mouth. As in slitting the bamboo the node above has been cut through along with the internode below it the thickened cut segments of the node make a kind of hooklike projection on the end of each of the vertical rods of the basket.

In connection with the illustrations of the arrows and bows we learn that the former, which are generally rather complex in their formation, are poisoned with the juice of a pilocarpus. The bows are for the most part simple.

The sheet of outline pictures shows very well the negro-like features, the thick lips, retreating foreheads, concave noses, and protecting teeth of these people. The shorn occiput gives to the head an extremely brachycephalous profile, and from these sketches one realises the accuracy of the observation of the Chinese writer Chao-ya-Kua, who six hundred years ago described them as "small in size with round and yellow eyes, with curly hair, and their teeth show through their lips."

Dr. Meyer is not able to satisfy himself as to whether the occipital tonsure has any special meaning, or whether the great flattening of the skull is intentional and artificial or produced accidentally by the cradle or other pressure in infancy, but he is inclined to believe that it is intentional, and that the depressed

forehead is associated with it. No application of pressure has been seen nor any such manual moulding as some writers have described among some of the Melanesians. The projecting jaw gives an ape-like appearance to the face, and the apparent microcephalism does not seem to interfere with the intelligence or liveliness of the Negritos, among whom occasionally are to be found some faces which scarcely differ from those of some Europeans.

Tattooing is apparently universal, the patterns being simple, but Dr. Meyer was not able to find out if there was any significance in the different styles of ornamentation, or if the tattooing was performed at any definite period.

The hair is fine and woolly, arranged in close spiral rolls, varying from a dark seal-brown to black. In structure it has a firm continuous cortex with little or no medulla; it turns grey in old age. In children it is soft and silky and tends to grow in long slender corkscrew curls. By the study of shaven heads Dr. Meyer determined that it was generally diffused on the scalp, not growing in islands with bare patches between, the grouping of the follicles differing little from that noticeable in European heads. There is always a certain grouping of hair follicles in all heads European or Negro, but this does not seem exaggerated among these people. They are all woolly haired, the supposed straight-haired Negritos mentioned by some authors being according to him non-existent.

Dr. Meyer found the Negritos to be a happy, lively people, to whom care seemed a stranger, their great anxiety being the procuring of their food, which is of all kinds eatable, fruits, roots, honey, even snakes. When they have provided for their wants they care for no further exertion, and love to lie in laziness and ease. Their songs consist of monotonous endless unison chants, apt to become very wearisome to the hearer.

The stature of twelve males ranged from 1401 mm. to 1505; seven ranged from 1401 to 1409, and five from 1500 to 1505. Semper gives as their range from 1405 to 1489, and Schadenberg from 1350 to 1450. There is a trifling difference between the statures of the sexes. MacLay measured one female of 1300 mm. Combining all observations the stature of the males has been found to range from 1401 to 1575, and that of the females from 1300 to 1485. The Andamanese have about the same range, the ascertained limits being 1362 to 1600 in males, 1302 to 1496 in the females. The Papuans exceed these, the males being from 1417 to 1651 (one exceptional individual having been 1755). The females range from 1404 to 1534.

The vocabularies gathered by all observers are here combined and Professor Kern as the result of his investigation regards it as both a grammar and vocabulary a pure Malayo-Polynesian speech nearly allied to the Tagalese and Biscayan. All the vocabularies hitherto gathered have been from places which have been under Malay influence, and it is possible that the more extended study

of other word-lists may show some more specific Negrito peculiarities. The pronunciation is in some respects peculiar, and the accounts given by some of the older Spanish authors certainly suggest that at one time they had a language of their own. At the same time there has not as yet been discovered that special element in their speech which the late M. Terrien de la Couperie supposed he had found.

The vocabulary, like that of so many island word-lists, shows a predominance of labial sounds as initials, little aspiration and the absence of the *j*. In the grammar the pronominal suffixes and the verbal infixes resemble those of some allied tongues.

The most interesting section of the work is the chapter on the distribution of the Negrito race, a subject upon which much has been very loosely written, and in consequence much error has become current. Dr. Meyer makes a critical inquiry into the grounds of many of the popular accounts of these people, and shows how baseless are many of the statements in reference to the occurrence of Negritos in other lands. In the Philippines there is an estimated population of 20,000 out of a general population of seven millions and a half. They have been found in Luzon, Alabat, Mindoro, Panay, Negros, Mindanao, Tablas, Cebu and Palawan. In some places as in Negros there are Mestizos with a strong admixture of Negrito blood.

Outside the Philippines the evidence of their existence in Borneo is very shadowy, but the presence of Negritos in Celebes, Timor, Moluccas, Java, Sumatra, Belitong, Engano, Formosa, Japan, Loochoo and China is not proven, and in most of these cases more than doubtful. The Semangs of Malacca and the Andamanese are their nearest congeners in structure. The Negrito nature of many of the hill tribes of India. Ghonds, Bhils, &c., requires careful investigation by some one acquainted with the real Negritos. The late Valentine Ball, who was familiar with the Andamanese, has told me that there has been a great deal of inaccurate writing on that subject. In our last conversation, a very short time before his death, he expressed his intention of putting together a number of his notes on the subject with a view of proving that much of the supposed Negrito admixture among the hill folk of India had been hastily assumed by observers who had very insufficient opportunities of becoming acquainted with these people, and he specially warned me concerning certain statements put forward in some modern works on pigmy races.

That the Papuans and Negritos are allied is the opinion of Dr. Meyer, in spite of the supposed prevalence of dolichocephaly among the former. They are, he believes, a variable race much influenced by their environments.

Much yet remains to be learned especially of the physical anthropology of the Negritos, and it is to be hoped that, while yet they remain as an existing people their anatomical structure may be more carefully studied than it has yet been. Researches in this line and the gathering of vocabularies from a wider area are

desirable supplements to Dr. Meyer's work, which as will be seen from this brief summary is one of the most remarkable works by this distinguished author.

A. M.

"The Buddha and his Religion." By J. Barthélemy Saint-Hilaire. (Routledge and Sons.) pp. 384. 8vo. 1895. This is a translation from the French by Laura Ensor, and forms one of Sir John Lubbock's "Hundred Books" series. The purpose of the work is to bring out in striking contrast the beneficial truths and the greatness of our spiritualistic beliefs, which a knowledge of Buddhism has enabled the author to better perform. The book is divided into three parts, viz.: Part 1. The origin of Buddhism. Part 2. Buddhism in India in the seventh century of the Christian era. Part 3. Buddhism at the present time in Ceylon.

"The Ruling Races of Prehistoric Times" in India, South-Western Asia and Southern Europe. By J. F. Hewitt. (A. Constable and Co.) Vol. ii. pp. 382. 8vo. 1895. Volume i of this work contained six essays, and told the story of the divine education of civilised man, and how our forefathers "fought their way out of the darkness of ignorance." The present volume continues these essays and gives us three more of them, the titles of which are (vii.) The Astronomy of the Veda, and its Historical Lessons. (viii.) History as told in the Mythology of the Northern Races, the Fathers of the Temple-builders, the Sons of the Seed of Life, the Eight-rayed Star. (ix.) History of the worship of Ia or Yah, the all-wise Fish-Sun God, as told in the Mythology of the American Indians, Scandinavians, Finns, Akkadians, Arabian, Assyrian, and Syrian Semites. Iranians, Hindus, Chinese and Japanese. The book is furnished with a very full index.

"The Growth of the Brain": a study of the nervous system in relation to Education. By Henry Herbert Donaldson. (Walter Scott, Ltd.) pp. 374. 8vo. 1895. This forms a volume of the useful "Contemporary Science Series" edited by Mr. Havelock Ellis; in it the author has brought together much material bearing on the nervous system of animals and the growth changes which produce its power. Many points not often touched upon are emphasized, such as:—The growth of the nervous system compared with that of the body; the interpretation of brain-weight in terms of cell structure; the early limitation of the number of nerve cells; the dominance of nutritive conditions; the wide diffusion of nerve impulses; the incompleteness of repose; the reflex action of all responses; the native character of mental powers; and the comparative insignificance of formal education. The book is well illustrated.

"Egyptian Tales," translated from the Papyri. Second Series, xviiith to xixth Dynasty. Edited by W. M. Flinders

Petrie. (Methuen and Co.) pp. 146. 8vo. 1895. Four tales are included in this volume, viz.:—The taking of Joppa; the Doomed Prince; Anpu and Bata; and Setna and the Magic Book. Each one of them is explained and remarked upon by the Editor.

"Norseland Tales." By H. H. Boyesen. (T. Nelson and Sons.) pp. 247. 8vo. 1895. A collection of ten popular Norwegian tales.

"A Visit to Bashan and Argob." By Major Algernon Heber-Percy. With prefatory note by Canon Tristram. (Religious Tract Society.) pp. 175. 8vo. 1895. An interesting description of a journey made by the author from Damascus to Bosra and Salcah and back. The volume is profusely illustrated by excellent pictures, most of them apparently reproduced from photographs, of natives and scenery.

"Rambles in Japan," the land of the Rising Sun. By H. B. Tristram. (Religious Tract Society.) pp. 304. 8vo. 1895. This is an account of the author's visit to Japan, and for the most part is a transcript of his daily journal. The book is of great interest, and it not only describes several parts of the country seldom visited by foreigners, but many topics not generally dealt with are touched up. The author had special advantages of gaining an insight into the customs, manners, and language of the natives, in being accompanied by his daughter, who had been a resident in the country for some years.

"On the Structure of Greek Tribal Society." By Hugh E. Seebohm. (Macmillan and Co.) pp. 147. 8vo. 1895. An essay on the course of social development written with the object "of trying to put back in their true setting some of the conditions prevailing, sometimes incongruously with city life, among the Greeks in historical times, and by comparison with analogous survivals in known tribal communities, of whose condition we have fuller records, of establishing their real historical continuity from an earlier stage of habit and belief."

"Noémi, a Story of Rock-Dwellers." By S. Baring-Gould. (Methuen and Co.) pp. 368. 8vo. 1895.

"The Home Life of the Ancient Greeks," translated from the German of Prof. H. Blümner by Alice Zimmern. (Cassell and Co.) pp. 548. 8vo. 1893. This contains an account of the life and customs of the ancient Greeks, as deduced from their literature, art and inscriptions. It is illustrated with numerous interesting cuts and is provided with a good index.

"Essays and Notices, Philosophical and Psychological." By Thomas Whittaker. (T. Fisher Unwin.) pp. 370. 8vo. 1895. The contents of this volume, with the exception of the

first essay on the philosophy of history, are reprints with slight alterations of papers that have appeared before in various periodicals. The author has done well to collect them together and issue them in volume form.

"The Origin and Nature of Man." By S. B. G. McKinney. (Elliot Stock.) pp. 95. 8vo. 1895. This little book is divided into two chapters. In the first of these the author gives an analysis of the Origin and Nature of Man; in the second, man's origin is argued by employing the imagination to look upon him from the standpoint of his Creator.

"Was Israel ever in Egypt?" or, a Lost Tradition. By G. H. Bateson Wright. (Williams and Norgate.) pp. 382. 8vo. 1895. This volume contains Hebrew story and history; stories based on derivations; genealogies; Hebrew feasts and customs; elements of improbability in the Hexateuch narrative; enquiry into the origin of the names of the Patriarchs; Synthesis; Hebrew and Chinese history and religion: a parallel; and criticisms on the whole work. An appendix on the doctrine of immortality in the Old Testament is given.

"An Outline Grammar of the Deori Chutiya Language," spoken in Upper Assam, with an introduction, illustrative sentences, and short vocabulary. By W. B. Brown. (Assam Secretariat Printing Office.) pp. 84. 8vo. 1895. The tribe which speaks the Chutiya language numbers less than 4,000 individuals. Very little has been previously written about this language, and it probably in no distant future will become quite extinct. The present grammar is therefore of importance as being a record of the language of the Deori people.

"The History of Mankind." By F. Ratzel. Translated from the second German edition by A. J. Butler, with preface by E. B. Tylor. Part I. (Macmillan and Co.) pp. 48. 8vo. 1895. This work is to be issued in thirty monthly parts, and will contain information that has been gathered by many generations of travellers all over the world down to the present day. It will be profusely illustrated with cuts, which from the part before us, appear very accurate, and coloured plates of the natives and their costumes.

"Kafir Stories." By William Charles Seully. (T. Fisher Unwin.) pp. 201. 8vo. 1895. A collection of seven interesting Kafir stories.

"The American Antiquarian." Vol. xvii. Nos. 3, 4. (No. 3.) The story of the Creation among the American Aborigines, a proof of prehistoric contact, by S. D. Peet. A visit to the Scene of Romona. Stockades and earthworks in New Zealand, by E. S. Best. Discovery of a new tribe of Indians. The Choctaw Robin Goodfellow, by H. S. Halbert. Submerged

forests and peat-beds. Prints of the human hand in the ruins of the Cliff-dwellings. Egyptological notes, by W. C. Winslow. Palestine Exploration, by T. F. Wright. The Calendar system of the Chibchas. Description of the site of "Old Coosa," Alabama, by T. H. Lewis. The Symbols of the Samoans. (No. 4.) Pre-historic contact of Americans with Oceanic or Asiatic peoples, by Prof. C. Thomas. The soil which made the Earth; a legend from the north-west coast, by G. C. Teall. The Moqui Snake-dance, by R. H. Baxter. A little-known civilisation, by J. Deans. A map of Illinois in 1680, by H. W. Beckwith. Remarkable Arizona ruin. Rock-shelters in New Zealand, by C. A. Perkins. The study of maps, by S. D. Peet. Egyptological notes, by W. C. Winslow. Scenery on the Colorado, by J. W. Powell.

"The Journal of Mental Science." Vol. xli. No. clxxiv. Daniel Hack Tuke, by W. W. Ireland. A review of the last twenty years at the Worcester County and City Lunatic Asylum, with some conclusions derived therefrom, by E. M. Cooke. Atrophy and Sclerosis of the Cerebellum, by C. H. Bond. Notes on a case of cerebral Hemiatrophy, by J. J. Cowan. A further contribution on the relationship between Chronic Renal Disease and general Paralysis of the Insane, by H. C. Bristowe. Sanity or Insanity. A brief account of the Legal and Medical views of Insanity, and some practical difficulties, by G. M. Robertson. Collective Investigation in Mental Diseases, by C. Mercier. On the Clinical and Pathological relations of general Paralysis of the Insane, by R. Farrar. Clinical Notes and Cases.

"Proceedings of the Society of Biblical Archæology." Vol. xvii. Part 5. The Testament of Jacob (Gen. xlix), by C. J. Ball. Note on length and breadth in Egyptian, by P. Le P. Renouf. The Book of the Dead, by P. Le P. Renouf. Two Monuments with a Votive Formula for a living Person, by A. Wiedemann. Assyriological Notes, by F. Hommel. Letter from W. L. Nash. Note to the paper on the Karian and Lydian Inscriptions, by A. H. Sayce. La Condée Royale du Musée Egyptien du Louvre, by P. Pierret.

"The Scottish Geographical Magazine." Vol. xi. Nos. 7-10. (No. 7.) Notes on Franklin's Arctic Expeditions, by W. S. Dalgleish. The Labrador Peninsula, by R. Bell. (No. 8.) The Scenery of Sutherland, by H. M. Cadell. The Nile Reservoirs, by H. D. Pearsall. The People of Tibet. List of objects shown at the Franklin Commemoration Meeting (No. 9.) Notes on the Geography, Geology, Agriculture and Economics of Iceland, by H. J. Johnston-Lavis. The International Geographical Congress. (No. 10.) Address to the Geography Section of the British Association, by H. J. Mackinder. Africa as a field for Colonial Enterprise, by G. F. Scott-Elliot. The British Association, 1895. Joseph Thomson, by J. G. Bartholomew.

"L'Anthropologie." Tome vi. No. 4. Dain quaternaire de Bagnères de Bigorre (Hautes-Pyrénées), par Edouard Harlé. Note sur l'époque des métaux en Ukraine, par le Baron de Baye. Réflexions anthropologiques à propos des tumulus et silex taillés des Comalis et des Danakil, par M. le Dr. Jousseau. L'Infantisme, le Féminisme et les Hermaphrodites antiques, par Henry Meige.

"Revue Mensuelle de l'École d'Anthropologie." Ann. v. Nos. vii-ix. (No. vii.) Le Passé et l'Avenir du Commerce, par Ch. Letourneau. Chronique Palethnologique, par G. de Mortillet. (No. viii.) Les Mottes (Cours de palethnologie), par G. de Mortillet. (No. ix.) Le milieu extérieur (Cours de géographie médicale), par Capitan. Discussion des concepts psychologiques. Sentiments et Connaissance. Etats affectifs (Cours d'Anthropologie physiologique), par L. Manouvrier. Découverte de Silex taillés dans les tufs de la Celle-sous-Moret, par E. Collin, Reynier et A. de Mortillet.

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OF
GREAT BRITAIN AND IRELAND.

NOVEMBER 12TH, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The presents that had been received were announced and thanks voted to the respective donors.

The elections of Dr. FRANK CORNER, Mr. T. W. FALCONER and Mr. G. G. LANCASTER were announced.

The following paper was read:—

“The Customs and Habits of the Natives inhabiting the Bondei Country.” By the Rev. GODFREY DALE.

An ACCOUNT of the PRINCIPAL CUSTOMS and habits of the NATIVES inhabiting the BONDEI COUNTRY, compiled mainly for the use of European Missionaries in the country. By Rev. GODFREY DALE (Univ. Mission), Zanzibar.

THE Bondeis are a tribe of natives occupying a narrow strip of country lying to the west of the coast land which is opposite to Pemba. They are bounded on the east by the coast people and

the Wadigo, on the west by the Washambala, on the south by the Wazegua, and on the north by the Wadigo and Wamasai. They are said to have come from the territory to the north, now occupied by the Wadigo, in the course of a war with a Mkilindi named Mwere. It was at this period that they were split up into the clans which at present exist and of which some of the names are subjoined :—

Wa Mindu.	Wakina Mauya.
Wakina Msimbazi.	Wakina Malale.
Wamwega.	Wa Tongwe.
Wakina Msogee.	Wakina Pandeni.
Wakina Lukindo.	Watewe.
Wakina Kalekwa.	Wamgambo.
Wazingo.	Wakina Maumba.
Wakumbi.	

When the Bondeis were driven from the land they formerly occupied, they settled in the land in which we find them now, and a division of the country took place, and this partition originated the clans now existing.

These clans intermarry ; there is no difference in dress, they shave alike, and have no distinctive names. The technical Bondei word for clan is *uolo*. Tribe is generally designated *kabila*. Household, *unyumba*.

The Customs Relating to Birth.

When a Bondei woman feels that her time is near, she sends for her mother and mother-in-law, because witchcraft is always feared on these occasions. Probably before the day of birth, and during pregnancy, the husband has been to the fortune-teller (*mtoa miamulo*), to ask whether the child will be a boy or a girl. Possibly also he has made a vow (*kuika nyadili*) to make an offering to an *mzimu* or spirit, in the event of a successful delivery. Medicine is often administered to hasten the delivery. If there is a miscarriage, they go to the Diviner and ask the reason. They are told "your wife has the Evil Spirit Mng'indo," or "Mzimu" or "Nyoka," and the woman will be given precautions (*miiko*), *i.e.* :—

- (1) Don't go to distant villages.
- (2) Don't go to dances.
- (3) Don't cross the stream.

If the woman dies in childbirth, the probability is that the child will be killed, and in former times, the husband could be sold if he did not pay the amount fixed by relations of the deceased. In such a case the relations would not mourn the

deceased. On the day that a Bondei child is born, the house is full of women; the chief women (*wakulukulu*) and the midwives (*walala*, *wahokezi*, *wagundu*). If the child is born head first, it is a *kigego* (unlucky child), and is strangled; if it cries or evacuates, it is a *kigego* and is strangled. If the father has not been in the *galo* (*kekutoigwa*) or the mother has not been in the *kiwanga* (*kekuriniwa*) (initiated), the child is a *tumbwi* (offence), and is strangled. If the child is killed in this way, the midwives dig a hole in the brushwood, bury the child, and put over the place a *nyungu* or cooking pot.

But if the child is a good one it is preserved alive. The mother is then given *ugali* (gruel), and *kuku* (fowl) and *kungu* (beans) and a great deal of *bizarri* and *pilipili* (pepper). The midwives have *pombé* (beer) brought to them and chickens will be killed and food cooked. These victuals have a technical name *visamasama* (unclean). For seven days the mother and child stay in the house. The eighth day is a very important day, for it is then that the child leaves the house. Up to that date, the child is fed with *kungu*. The midwives chew it first and then give it to the child, and then they rub its back and its head with the *kungu*. This is called *kusisa* (smear). He or she does not drink any milk but that of relations, as *usawi* (witchcraft) is feared. The child is dressed with a girdle of black *kaniki* (or dark cloth) on the loins in order that he may not dream a bad dream. On the eighth day the father goes in search of the doctor and a fowl; when the doctor comes, he takes an *ungo* and his "bottle," *nkoba*, and puts it in the *ungo*; he also takes strings to bind the wrists of the child with, *vihogo* (a kind of charm), and also *herizi* (or charms) for the mother. The *mlala* (midwife) will then take the child in her arms and enters the house seven times, and a woman pours water over them each time. Then the child is taken out, carried in the arms, and is shaved in front above the brows. It is shaved with *unga* (flour) and water on the *mgonja* or *sakine* (forehead), and then the *vihogo* (charms) are put on its legs and arms and neck.

The child will then be given its name. The father takes flour in both hands, fills the child's ears with the flour, and names the name of its grandfather. Then the *mlala* (midwife) comes and gives it a second name, which is the one generally used. To call a man by his own name is often an insult, parents will go to the *mtoa miamuro* (diviner) to find out a good name.

The names are chosen as follows:—A child receives its grandfather's name. A father is *Seng'anya* or "father of so and so." If he has two sons, you can call the father, father of either. Thus, a man has two sons *Mgaya* and *Changale*. You may call

him Se mgaya or Se changale. The mother will be Mamgaya or Machangale. Every one has an ordinary name and a nickname which may be traced to any circumstance.

If the child is taken ill after the name has been given, or cries at night, and does not soon recover, they say that the *mzimu* (devil or spirit) is not pleased and they will give it another name, possibly resorting once more to the *mtoa miamuro*. When the name is given, the doctor (*mganga*) is the sponsor. If the father gives the first-born a name and the child dies, the mother gives the second child a name.

Thus the name is given, and the mother is then "bled" (*chanjiwa* or *kusengewa sale*) in four lines on the breast and four on the back; next she is given her *herizi*, a large one for the breast which is called *pingu za kifua*, then she is shaved, leaving a central patch, and finally she is given "restrictions" or *miko*, i.e.:—

- (a) Don't go where there are many people.
- (b) Don't cross the stream.
- (c) Don't eat vegetables.
- (d) Don't go home for a long time.
- (e) If a stranger comes, don't let him touch the child till he has slept in the town.

When this is all over, the doctor eats his porridge and fowl, and receives his fee R. 1. If the mother has no milk, the doctor comes and puts on medicine. If the mother wishes, she is *punga'd*, viz., exorcised and the devil is called *pepo ya ujusi*.

When the child can walk, they pound *kutwanga* (to pound), a whole basket (*kikapu* or *ngahu*) of porridge, and seek ten women to carry the corn to the *mwegazi*, who is the brother of the mother. They all sleep in his hut, and in the morning the child is shaved again and washed with oil. Then rice and Indian corn are put on its head, and beads on its neck (the reason assigned is joy that a child has come into the world). Then they return.

The mother places the hair which is shaved off on the day that they come out of the house (the eighth day), under the care of a "devil expeller," *mpunga pepo*; then she is *punga'd* (exorcised) a second time and both are shaved. This takes place before going to the *mwegazi*. This second devil is called *pepo ya kumoga mwana* (the devil of the child-shaving).

If you see a child with a charm on its hair, it is called *herizi ya ndege* (bird charm) because he cries at night.

The child now grows until the time of teething, and then once more its poor little life is in danger, for it may be so incautious as to let its upper teeth (*meno ya kenya*) protrude

first, and if this is the case it is a *kigego*, and will almost certainly be killed. If it is allowed to grow its life will be in perpetual danger, and any disaster which happens to its parents will be attributed to it. (As to the manner of its death, see under "Mtani.") But if the under teeth (*meno ye hisi*) protrude first, the child's moral character is established; he cannot, however, enter the house in which the unmarried men sleep until he has been *ambazwa* (publicly welcomed). All the boys and girls now assemble together, and the father of the child brings it out to show them that the lower teeth have protruded first. Then every house contributes Indian corn, and the children pound and eat it, and so the child is formally welcomed into the family. The father kisses (*kusasa*) his child. Sometimes *kungu* are given.

If the child is a girl it will then be taught to pound corn (*kutwanga na kubunduga*) by its mother. Probably at first the child will imitate its mother by pounding earth and stirring it in a cup. If the child is a boy, it will learn to dig, and to take care of the flocks or any work that its father does.

The games commonly played by the children are as follows:—

Kutoa Matewa.—(To flip beans.) This is played on a level spot with the fruit of a tree, which is black and like a broad bean. They arrange sides, and one side set their *matewa* (beans) on the edge, upright. The other side lay theirs flat, and flip them across the intervening space, trying to knock down the beans of their opponents. If they hit their opponent's *tewa* (bean), they say *Ufinge* (forfeit), and the person is *finge* (out of play). A friend is redeemed as in rounders.

Gole.—Something is hidden in the ground. Then they arrange sides, and there seems to be a general scramble until one side can dig up the hidden thing. I am informed that pinching is freely indulged in.

Kugeezana Maika.—This seems to be a wrestling match.

Midoma.—This is the Bondei *tingi*, a kind of dance between two people, in which one has to follow the movements of the other's feet.

Kutoana Makankala.—A kind of stone throwing with clods of earth.

Mwefisiano.—A kind of hide and seek.

Kulasa mivi.—Bow and arrows.

Mwikiano.—To put your arrow into the ground and let the other shoot at it. If he hits it, it is his property. A good shot, *nina kitalo*.

Kutega Mtego.—Bird traps. cf. *Kutega matenga*.

Kuhoma.—To catch birds with bird-lime (*ulimbo*). There seem to be many kinds of bird-lime :—*mtosa*, *mzea*, *cha yogwe*.

Kondo ya Bunduki ya Manga.—A kind of pop gun, made of cassava tree.

Kazita ka Mbongo.—Lit., The small bow of the lie. This is a kind of boyish ordeal in case of accusation, and is called trying fire. A small bow is placed among ashes, and then the boy tries to cut the string with his lips. If his mouth gets dirty in the process he is guilty.

Mavuluga.—Apparently the children sit on the ground with the feet stretched out, and one sweeps between the ankles with a stick and apparently tickles them in the ribs.

Kiwanga cha Muungu.—This *kiwanga*, I am told, is quite harmless. It is played with the little girls. They are given pice but are not taught any secrets. *Vihali* (cf. "the Great rite.") The little girls are painted up for the occasion.

Dingida.—This is like our "Puff bladder."

Kuba na Kuba.—A game played by two boys. They join one hand and with the other one each strikes his chest, and the unemployed hand of the other, above and below the joined hands.

Kungi da Puti.—This is our "oranges and lemons." The children sing, *Kungi da puti daanga ikedu*.—"The old withered stump in the deserted shamba is gadding about alone," viz., the last boy or girl left.

A very common amusement among the children is to ask riddles, which are called *Vinundu*. The asker says, *Kinundu*, and the people answer *Kalete*. A few are subjoined :—

BONDEI.				ENGLISH EQUIVALENT.
RIDDLE.		ANSWER.		
<i>Kunupu kunupu</i>	= <i>Mkia wa ng'ombe.</i>	He imitates the sound of the tail of the ox ? Ans. Ox-tail.
<i>Deengwa</i>	= <i>Kombati</i>	What goes round and round ? A building pole.
<i>Fufumo mpelu</i>	= <i>Zindo</i>	A burrowing rat ? A root.
<i>Nyumba yangu haina mlango</i>	= <i>Tagi</i>	What house has no door ? An egg.
<i>Zigezige danibuzi pwani</i>	= <i>Sia</i>	A long road that has no ending.
<i>Sia ya pwani ina anga</i>	= <i>Ngata.</i>	

BONDEI.		ENGLISH EQUIVALENT.
RIDDLE.	ANSWER.	
<i>Sia ya pwani idolonywa</i>	= <i>Unyoya wa kanga.</i>	You have no eyes, where are you going to? Ans. A pumpkin plant.
<i>Manemane yanibuzwa pwani</i>	= <i>Matengu.</i>	
<i>Kuna meso, wakita nakahi</i>	= <i>Ukungu</i>	
<i>Wezio wengia ngumbai, we kungia ngumbai, wagojani.</i>	= <i>Mnazi.</i>	All have shut their doors but you; what do you wait for? A nose.
<i>Wezio wavugala wee kwekuvugala wagojani.</i>	= <i>Mpula</i>	
<i>Ngno ya babaya, yalawa sikw ya ntambo.</i>	= <i>Luavu.</i>	
<i>Babakafa, alawa suguti</i>	= <i>Huti</i>	Father's dead. He sweats? A banana stalk, which, if cut, gives out a white juice.
<i>Baba afa, ukombe waimba nyimbo.</i>	= <i>Kizela.</i>	
<i>Luvi, kidanta miti, kaemwa ni mkongolo.</i>	= <i>Hoya.</i>	
<i>Wamgulusa 'kumbuia</i>	= <i>Kizuli</i>	Chase him, you won't catch him? A shadow. Tip of finger.
<i>Uku kulungi, uku babala</i> ....	....
<i>Kadodo kamwe ni kazembe</i>	= <i>Mntu aka-mogwa.</i>	
<i>Ngumba yangu nkulu, kaina langa fula ikanya yadoda.</i>	= <i>Mcembe.</i>	One little one yet a king! One hair left after shaving.
<i>'Kana meno iakomo atula maruha.</i>	= <i>Uina</i>	
<i>Neza, wanikaula, wanikauliani Zani da mkuvukuru digubikia ntembo ngima.</i>	= <i>Mlango</i> = <i>Kiza.</i>	

As the child grows older, if a boy, he will help his father to cultivate his plot of ground (*kuima munda*). He probably has his hoe (*gembe*) and his hand axe (*uhamba*). He cuts the grass, reaps the Indian corn (*kubonda*), cuts the millet and semsem (*kusenga uhamba na uruta*) and shreds or cuts off the ears of rice (*kuhulula ema kudenya mpunga*). He very often stays a very long time, watching the rice which is eaten by birds (especially

nofi and *watongo*) or the Indian corn which is often much spoilt by pigs (*nguruwe*) or monkeys (*tumbili*). In the day-time they stay and eat in the small sheds (*makumbi*) which are built on the ground, or by night in the hut which is built in the tree (*dungu*). The commonest animals seen are monkeys, leopards (*svi*), snakes (*nyoka*), or mangoustes (*matukwa*)? or pigs. The child may help to keep the flock (*kulisa*, *mlisi*), oxen, sheep or goats. He may see a leopard, a hyæna (*fisi*), a jackal (*kingugwa*) or perhaps once in a life-time a lion. The child may also be sent by his father to tap the cocoa-nut trees for *pombé* beer (*kugemu minazi*). He may follow his father to hunt (*kukita ukala*) for which see *Ukala*.

The Galo.

This is a very important rite among the Bondeis, though less so than formerly. As no man can marry unless he had entered the *galo*, or since if he married, his children would be killed, it is no wonder that the custom gained a very complete hold of the people. No one who has entered is likely to repeat the secrets (*vihili*) therein divulged, as he would certainly in that case have to undergo a great deal of persecution. He is moreover terribly frightened in the *galo*, being told that if he did reveal the secrets he would either die or fall a victim to a terrible disease, "leprosy" for instance. As, however, it explains a great deal of current speech and custom, it is the more necessary to obtain a grasp of its details.

Any one of the elders (or *wazee*) seems capable of instituting a *galo* (*kusimika galo*, to set up). He has in all probability some children of his own, and is anxious to enter them. He assembles the principal relations on the father's and mother's side and announces his intention. A day is fixed for the commencement of the *galo*, orders are given for sufficient *ugali* (or porridge), and an ox or a goat is bought. The day arrives, and in the morning the boys are shaved and in the evening they enter the forest. A space has previously been cleared for their habitation and the *msangi* (doctor) has been summoned to prevent or drive away witchcraft (*kufinga uchawi*). When the boys enter the forest they are stripped of all clothes by the *makungwi*, i.e., those who have already entered the *galo*, and now initiate the others (*waali*) into the "secrets." The next morning they go and cut themselves a kind of kilt (*visambo*), made of bark, and smear their bodies. The bark is the bark of the *mwari* (a tree).

By this time others have come from other villages dressed in

banana leaves, not having had time to secure the *visambo* (kilts). They dance in the village and sing :

“*Nguneve mtume, katuma miangu.*”

and the people answer :

“*Hanga tume.*”

The meaning is, “The pig is a burrower, my friend has burrowed,” and the people say, “Burrow a hole,” *i.e.*, others have entered the *galo*, why not? If any of this *majani* (leaf) falls to the ground, the *makungwi* pick it up for fear of witchcraft.

The next day, or this same day, about the sixth of the *galo*, is called *Siku ya kanga*. All go into the forest very early while the dew is on the grass, and the *makungwi* sing :

“*Mginga kacha mpeho.*” (The hunter fears not cold.)

the *waali* answer

“*Ehe Eh. Na, la ! la !*”

The same day the children go to their father's house, and are asked, “*Wondani!*” (What do you want?) They answer, “*Kola, naonda Kola,*” and they are given chickens. They stay in the forest most of the day and eat cassava, and bananas and their chickens. It is after this that they go into the village and sing the *ngurure* (pig), but previously a *kungu* is hung up in the forest, and the boy goes and kneels and bites it. When they have finished the song about the pig, they re-enter the forest and find a pig made of earth by the *msangi*, standing up dried with its young one. The boys dance round it.

Then they find a big pit covered with trees and earth, and inside on the sides they have smeared *mbawa*, which appears to be a kind of juice of a sticky nature which burns. Each goes in separately, being told that he is going to be buried. On entering he sees an exit, but the pit is narrow, and in his struggle to extricate himself, he is considerably burnt. He is asked what he thinks of the lower regions, and the *kihili* is called *Kutamba kuzimu*, or “A visit to the lower regions.”

Another *kihili* is the *Sime*. A real sword is brought, and one boy chosen, and told he is to be killed and had better make haste and confess his sins. In his fright he does so, much to the amusement of the *makungwi*. The real sword is taken away, and one of the rind of a banana stump is substituted. The first boy then lies down, and the entrails of a fowl are placed on his stomach that the others may confess and be laughed at in the same way. When all have confessed, the entrails are removed, and the boys know that they have been taken in. They are told not to tell anyone, if they do, then may they die!

Then they receive the tribal marks (*kutoigwa*). A large stick is cut, smeared with soot, and adorned with wings and a mouth like a bird. The boys are told to come and be pecked by a bird (*mdomolwe ni ndege*). They go one by one, blind-folded, and have the marks made on their arm by incision. I believe a boy has the same number of marks as his father. The man uses a razor. Soot is put in the wounds. The medicine is white earth, and is called *ng'ombe*. After the operation is over the boy is shown the razor, and told not to tell others. In this case, possibly deceit is necessary.

After this they go and dance and sing in their villages, and are fed and given pice. They carry little baskets with them called *vidunga*. By night the *makungwi* come and sing and show them the *vihili* of the *galo*. A great deal seems to depend on the *kungwi*. He may be cruel and dirty-minded, and if so his *mwali* will suffer.

Subjoined is a brief account of some of the *Vihili*.

Mbuluna.—Four or five people lie down and are completely enveloped in banana strips in the form of a large serpent which creeps towards some eggs which have been placed near. The object seems merely to raise a laugh at the expense of the lads.

They are told that the snake has fallen from heaven.

Tintimu.—A pit is dug, and an arrow placed across to which are tied strips of the bark of the *mwari*. If they are soaked in water, and the hand drawn slowly along, they make a sound like the roaring of a lion, the pit acting, I suppose, as a resonator.

Semaingo.—Is a *papaw papai*, which is made so as to emit a cry like a dove. It is covered with a cloth. The boys do not know till afterwards what it is. Again the object seems to be merely a laugh at the boys' expense.

Mbogo.—Is *ugali wa baridi* (or cold porridge), in the morning it is called *mbogo*.

They sing:

“*Oh eh, mbogo aketa mgina,*”
viz., “The *mbogo* eats young grass.” *mbogo* = buffalo.

Kokoko.—Is made of a half fruit of a baobab tree, viz., *uyu*. It is covered with skin like a drum. The skin and the top of the *uyu* are then perforated and strips of the *msali* (a tree) passed through and fixed by a knot inside the *uyu*. These if wetted and pulled gently letting the fingers slide along, make a sound like the bird (*kokoko*).

Gongola.—A man or boy was formerly not permitted to smoke until he had entered the *galo*. In the *galo* all smoke one pipe. If a man was asked “Who gave you leave to smoke?” he answered, “*Kiputa gongola mazitui* (I smoked strong tobacco in

the galo)." The *makungwi* make up a pipe, *wakondea kiko cha tumbako*. I have been told that the tobacco is the strongest possible.

Dimba.—The initiated sit on the ground with their legs bent. The *waali* then pass between their ankles and buttocks. Sometimes the boys are hurt very much, for the *makungwi* try to squeeze them with their feet. Some boys have had their ribs broken, and cases of death resulting have been known. The fathers as a rule are present for this reason.

Sozi.—A tear. This is putting pepper in the boy's eyes. The *kungwi* has a mixture in a cocanot shell. The first boy is called *Kizamu*.

Shundi.—They take a *moyo wa kili* (the heart of a banana stalk). The *kungwi* cuts lips and wings like a *shundi* (a bird) and puts on feathers and makes it cry like a *shundi*.

Luchechu.—Some of the boys do not go to sleep. They take the fire and throw it on those who are asleep.

King'uli.—Is a *gunda la mpapai* (trumpet made of a papaw tree), *na kisompo* (beer jug). He puts the *gunda* (trumpet) in the *kisompo*, and makes it cry like a hyæna. *Kisompo* is a little pot for putting *pombe* in.

Koni.—This custom is beastly.

Nemganga.—They take cocoa leaves and place them between the fingers and blow; it makes a sound like a child and they walk about the village by night. If asked what child cried in the night they reply *Nemganga* (a proper name).

Mtundu.—Another *kihili* (secret) exceedingly filthy.

Muluwene.—The water or slime of a snail. The snail is placed upside down, and the spittle collects. The *wali* are given it to drink.

Loholwe.—Waimba "*Loholwe wa nyokwe*," *nyokwe*. The meaning is pure filthiness. I was told that it was impossible to explain it for that reason. If a *mwali* (novice) breaks his *mwiko* (eats forbidden food), he has these words sung at him.

Besides all these *vihili*, there is a good deal of bad language (*matusi*), but this is in private. In order that the boys should not divulge the secret to their friends, they are frightened in the following way:—

A man is dressed up like a person suffering from leprosy (*mlema*). He walks about before the boys, who sing

" *Mlema, mlema, hongea mlema*
Msema kihiri uhite malindi."

The boys are told that if they divulge the secrets, they will die of leprosy.

Again they dig a pit and all the boys spit in it, invoking, I

believe, a curse on themselves if they break their oath and reveal the secrets.

Again there is the *kukomuwa*, a boy is struck on the forehead, hands, shoulders, knees, and feet with a stick gently, when he first tastes food in a village again.

The *King'uli* is the end of the *galo*. They all go to the place they went to the *Siku ya kanga* (guinea fowl day), and weave ropes of banana strips. This is dyed with *tungulu* (yellow). They then bathe entirely, and are clothed by the *mami* (aunt) *shangazi*. This *kamba* or rope is called *king'uli* and has four *kungu* on it, and is used as a belt ever afterwards. When clothed they enter the village and play. Then they go into the forest again and eat their *ugali*. The next morning they play at the doors of their houses. On reaching home (each boy may take a friend with him) they have food cooked for them, and are asked, "*Ho! mkukuni!* (How is it there in the forest)." They answer "*Ni hedi*" (It is well). The friendships made in the *galo* are said to be life long. The four *kungu* are equally divided between the two friends, each eating the other's two *kungu*.

I have been in a *galo* house; it is built with dried leaves of the banana stalk, and surrounded by a palisade made in similar fashion. This is called *swago*. Inside I found sticks on which were pieces of swine's flesh. I also saw a *kokoko*. One glance round was sufficient to show me that I had not been misinformed.

When a man has entered the *galo*, he must *kima nyende* (eat porridge). He goes into the bush a second time and is smeared all over a second time. The next morning they *koma mulungwana*. The meaning of that is, the moulder makes a figure of a man with a banana stalk, and clothes it with an imitation *kunzu* and cap and sword. The people then go and see the figure, and the uninitiated go to kill it, and when they have done that they take away the dried banana leaves and the banana stalks. (At first the Bondeis despised the Mohammedans and killed them in effigy. I am told they gained their present influence from the custom of driving out devils.) When they have done this they stay in the fields, and come away in the evening to *kukima nyende*, eat porridge. In the morning every man is made to enter his house and they shoot fowls with arrows. That is all, and the meaning is that they may have a right to enter into the city of Mlinga, and *wapate kubindiwa mriga*, i.e., that their mourning may be properly conducted. There are no additional secret rites in that after death he may become an *mzimu wa ugulo* (a spirit of healing) and be *vikwad*, or clothed when dead.

A youth is *vikwad* (clothed) with seven balls of porridge.

An adult " " ten " "
Kuvikwa is a technical term for sacrifices for the dead.

The Kivanga.

This is the corresponding rite of the girls answering to the *galo* of the boys. As in the *galo*, the commencement is "shaving and cooking." It is said not to be a complete rite. It lasts for twelve days. The girls are naked, not wearing *visambo* (bark tunics). They are sent about naked. They, or rather the *makungwi*, sing vile songs. They are finally given their clothes again and a line is drawn down their forehead (the *kanju*).

The second day the girls play in the forest. The *mwali* is put in the water and returns naked. In the evening they dance naked. The men beat the drum. If any girl has an *mchumba*, he comes and beats the drum, if not the husband or the father. The *mwasi* is lifted on to the back of her *kungwi* and seems to shake her neck. The beater of the drum is called the *sekilozzi*. This occurs every evening. The *makungwi* and the *sekilozzi* are the people who revile. The *sekilozzi* gives the *kungwi chumvi* (salt) and *kuku* (fowl). If the *sekilozzi* refuses to do this the *matukano* (revilings) are at end. Any other person who reviles is considered a rough lot, *mgobo*.

On the last day they go out very early and stay in the fields, fasting until the evening in order that the belly being loose they may be able to shake it nicely in the dance. When they enter the village in the evening, the drums are beaten and guns fired, and the *waali* enter on the shoulders of the *makungwi*. They are smeared all over with paint (*unga*, flour) in spots, like those of a leopard (*madoadoa*, spots), and lines on the head, red lines in the middle, white at the back, black on the right side, white on the left, and round line circling the head, white, black, and red. The substances used are *masize* (soot), red earth, and flour. When they enter, the *sekilozzi* throws the *mwali* and *kungwi* clothes (white), and then they dance, the *waali* descending from their perch (on the shoulders of the *makungwi*). Then at sunset the *makungwi* take pounding poles (*ntoro*) and place them (two) on the ground in the village. The *sekilozzi* has a cloth and dances with his sweetheart or wife, and they jump over the poles, and then the *sekilozzi* gives the *mwali* clothes and the dance is finished. In the morning they go to the forest again. It is called *komba*. They and the *makungwi* are shaved completely, and are smeared all over with oil. The clothes given to the *mwari* become the property of the *kungwi*. When the dance or *kivanga* is over, the *sekilozzi* and the *kungwi* revile each other.

As to the *vihili*, the *sime* and *satu* are the same as in the *galo*.

The "leper" puts a cob or *hingu* of Indian corn in her mouth and smears her face with soot, and cries—

"Ng! Kiduoduo wetangwa kwa zumbé."

The *ukwili kwili*, the husband or sweetheart, dances with the wife or sweetheart. They have a rope of banana fibre and all hold it. One has a stick and beats the rope, and they indulge in mutual revilings. When it is over the men go to find *miengo* (hair tails) and *mbuge* (bells), and the women return to the forest.

The *makungwi* instruct them in evil. The initiatory songs are pure filth, but rather by allusion than direct statement.

Some of the *vihili* seem to be very cruel, viz., a fire is lit and the *waali* are made to stand over it with feet astride, and again Indian corn is placed on the fire and the women are told to go and fetch it on chest and belly, and bring it in their teeth.

On the fourth day, the *wali* sings the following song to the *sekioloji*, partly to feign a quarrel, partly to assure the *mchumba* (sweetheart) that in the event of marriage the household goods will be forthcoming.

"I have been given a spoon : " *Aha mwiko kinkigwa ni tale :*
 You have none. *Hada ukakaa, kahana wako.*
 My stirring spoon, etc. *Mandemi mlasi wangu kinkwa ni*
tale
Hada ukakaa kahana chako."

And so on through all the list of common household goods. The carved goods are the gift of the father, the utensils, &c., the gift of her mother.

The *kimbizi* (completion of *kiwanga*) lasts two days. The second day the *waali* are anointed with oil and given clothes. If it was not for the father's inability to procure clothes at the right time, i.e., close of *kiwanga*, there would be no *kimbizi*. The *mchumba* is there as in *kiwanga*. There are no *matukano*. They only dance *mzituni* (in the forest), and are shaved. I am told that there is nothing evil in it, but it is the complement of the *galo*.

Circumcision of a Boy.

This is a regular tribal custom unconnected, as far as it is possible to speak definitely, with any religious instinct. The technical term is *kugwiswa* (circumcised). The custom is more or less carried out as follows :—

When a man wishes to circumcise his son, he buys fowls, native beer, and salt, and a good deal of Indian corn is pounded.

Then he goes to the doctor, who is called *Bakwa* or *mgwisa waana* (child circumciser). He comes early in the morning before the children are awake, and even the mother is not told if the child is young. All the children are gathered together, and the father of each child has a white cloth. There is a *kungwi* ready for every child at the spot where the circumcision will take place. He sits down and the *mwali* sits on his legs, naked. There are no women present. Then the child is circumcised, and the skin is placed in a *wiga* (jar) full of water. Each has a *wiga*. The skin is afterwards wrapped up and placed in the house. Then the doctor applies medicine. The *wiga* is then cleaned, and both *kungwi* and *mwari* will eat out of it. When the child gets well, the *mganga* takes all the *nyiga* (jars). All the children sleep together until they get well. When they are all well the doctor comes again and a feast is made. The foreskin is then hidden under the house. The children are then shaved and put on their best clothes, are anointed with oil, and walk about again. All this time the parents do not wash their bodies or shave, until the child gets well. That day is called the *siku ya kuusa kiza* ("The day of the rejection of darkness"). The custom is universal. An uncircumcised child or man is laughed at. The children stay in the one house, for the Bondeis say that if a person newly circumcised passes through the door of a person who has committed adultery, the wound will not heal. The father has no intercourse with his wife until the child is well.

Before the circumcision the husband asks his wife if she has committed adultery with anyone, and if she confesses the man will be summoned and told, "My child will not get well because of you." The guilty person then takes a cup or *lugata* of water and says, "If the child does not get well because of me, may he get well now." He then spills the water, *kusosola*. The man is told *wewe buge*, and will pay twelve dollars now. In former days he paid *dote mbili ema tatu* (two or three pieces of cloth). Then the *buge* brings a *bea* of *pombe* (cask of beer), and the claimant a fowl, and in the forest all this will be eaten and drunk with the elders. Then they are reconciled, *wasoganywa*. The fowl is killed, its liver extracted, and the *buge* and the claimant and defendant will be scarified in the stomach, the liver is cooked and cut in two, and each person holds one part, smeared with blood of the other, and eats it. Then one elder stands up with a knife and scimitar and lays the scimitar horizontally on the heads of the two parties, and says, "Now my friends, you have been wronged, but have been reconciled. If you still seek for vengeance by *usawi* (witchcraft), may the scimitar or the knife, if you use them, cut you and inflict an incurable wound."

Then it is that they eat the liver tinged with blood, and partake of food from one plate.

There are three kinds of *fika* (sacrifices to the dead) in connection with the circumcision :

- | | |
|-------------------------------------|-------------------------------|
| 1. <i>fika ya wazimu wa ugulo</i> ; | 1. healing spirits. |
| 2. <i>fika ya kiumbo</i> ; | 2. pottery. |
| 3. <i>fika ya sumuzi</i> ; | 3. sacrifice of the heirloom. |

but a full general description will be seen under the heads *wazimu* and *fika*. Only a short explanation is annexed here.

Fika ya wazimu wa ugulo (*ugulo* means sickness).

If there are three *wazimu* in a village or clan, the man who wishes to circumcise his child will go to the fortune-teller (*mtoa miamuro*) and will be told perhaps you have a *fika* and you must finish it. The father of the boy will then go to the old man, over the head of whose bedstead the *wazimu* are hung, and say, I have a *fika*, please let me have the *wazimu*. In the morning they will go to *vika*, *mzituni* (cf. *Kurika*.)

Fika ya kiumbo. *Kiumbo* (pottery).

If the grandmother has been a *muufi* or potter, the relations will take mud and a pot of *mahede* (young corn). Then the person who moulds the *chungu* (cooking pot), chews the *mahede* and sings :

“*Kiumbo yeu. Kiumbo.*” (Pottery la ! la ! pottery).

The others answer :

“*Chahonya*” (i.e., heals).

Then the potter sings :

“*Kiumbo cha mvetu na kiselemke
Leele.*” (May the art of pottery which is in our house prosper.)

When the *chungu* is finished the child is smeared all over with earth, on the hands, &c., and they say, *Mpeho ! Mpeho !* (Gently ! Gently !) The next day the child is circumcised.

Fika ya sumuzi. *Kusumuza* (to smear).

The *hau* (maternal uncle) comes with his medicine bottle (*nkoba*) with its powder (*mavumba na kioḡa cha mti*) and two or three *nkulo* (sticks for “charming”). There are a great many people and *kungu* are brought and the *hau* chews them, makes a mash (*mpumba*) of them and places on it the *mavumba* which is on the medicine spoon, and then he prepares it by rubbing it between the palms of his hands, and then smears the child's face with it, saying, *Mpeho ! Mpeho ! Mpeho !* The object is to procure a speedy recovery for the child. He is circumcised afterwards.

The “Bweni,” Boys' Common Room.

The *wabweni*, or dwellers in the *bweni*, are those who build. The *bweni* is the house occupied by all the unmarried men and

boys, too old to stay in their father's house for obvious reasons. The unmarried women and girls have their *bweni*. The bedsteads are the only furniture. They neither cook nor draw water for the *bweni*. A child must be *ambazwa* first (see Childbirth). They take turns to make up the fire. This is called *kwenkiizana* (to take turns). The mothers supply *kuni* (firewood), every mother one piece (*ukuni umwe*). As far as I can discover, it is never the custom for the boys and girls to enter each other's rooms. In the evening they may do so, but not one or two. Half-a-dozen may for the sake of a gossip. If one does do so he is called *mwauguizi* (one who opens the door by night when people are asleep). In the morning they go to their mothers' house to *kunawa uso* (wash their face). A *mbweni* (inhabiter of the *bweni*) does not cleanse the public "closet" (*kuima bangu*); he has no wife. And he does not contribute to the public collections in case of illness.

Marriage Customs.

The dowry on an ordinary occasion is more or less as follows:—

- | | |
|--|--|
| 1. <i>Pombe ya ntamwizi</i> | R. 1 = 1. gossip beer. |
| 2. <i>Pombe ya kegubula</i> | R. 2 = 2. beer to discuss difficulties. |
| <i>marwizi.</i> | |
| 3. <i>Pombe ya kigubika</i> | R. 4 = 3. " " remove " |
| <i>marwizi.</i> | |
| 4. <i>Pombe ya ukeegee....</i> | R. 2 = 4. beer of jollity. |
| (<i>ng'ombe</i>) 5. <i>Fetha " "</i> | R. 16 <i>ndipo aweza kuuoa.</i> |
| (<i>Sangula sala</i>) 6. <i>Fetha ya kulombeza</i> | R. 8 = 6. Money to beg a dance with. |
| <i>wia.</i> | |
| 7. <i>Mbuzi ya kiseeja</i> | R. 4 = 7. The goat of reconciliation. |
| 8. <i>Kuku za ulamu</i> | R. 4 = 8. The fowls of the relations-in-law. |

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This seems a large sum, but it brings with it security, for a father-in-law is not likely to quarrel with his son-in-law, as the quarrel may lead to a divorce, and divorce may imply restoration of the dowry money.

The customs in connection with marriage are very numerous and intricate. The following account was written by a Bondei:—

After "keeping company," if the young man wins the affections of the young lady (*mwasi wa kiryece*), he goes to the *kungwi*, who is a married man, and the *kungwi* goes to the father of the girl. If the girl's father approves of his son-in-law, he tells the *kungwi*, "Go and tell your friend to come" (*kusema usona*). A convenient day is fixed, and they *sema usona* (discuss betrothal). The first to enter the house is the female *kungwi* and her *mwai*; the house is

the house of the girl's father. When the male *kungwi* and *mwai* enter the house, he finds his future father and mother-in-law there, and some of his future brothers-in-law and relations by marriage. But the young man who is going to demand a sweetheart, does not sit down on a chair, even if he is offered it, for that is not good manners on this occasion; he sits on the ground. His *kungwi* is asked, "Well, what have you to say?" and he gives the necessary explanation, "This friend of mine wants this woman." The girl's father then asks her, "Is that so; do you want this man?" And if the girl really does like him, she answers "Yes," and her father then tells her, "Come and take his hand as a proof of your affection," and the girl takes his hand and says, "Father, his man is my husband," and her father asks her, "Is this he?" And the girl says, "Yes, father." And her father says, "Very well then! now I am waiting for my *kivyee* (that is the young man's father) that he may come, and we may talk the matter over thoroughly with him." And the young man goes away and tells him, "I am loved by so and so, daughter of so and so, and you are called by your *kivyee* (*kivyee* is the bride's father or the bridegroom's father), to talk over my *usona*" (betrothal). His father then looks out for beer and money, and if the place is close by, he takes his wife with him, and they ask each other a great many questions and have a friendly talk about the betrothal. And the beer or the pice is called "gossip beer" (*pombe ya ntamwiizi*), because it is then that the parents of the man and woman first begin to recognise and know each other as *viryee* (gaffers!) The young man will not eat with his father or mother-in-law until his marriage is over, nor does the young woman eat with her sweetheart or his father or mother.

Then there is a pause, and the young man's father procures two *mabea* of *pombe* or its equivalent in money, and takes it to his gaffer or *kivyee*, and that *pombe* is called *pombe ya kigubula mawivi*, that is, "the beer which reveals the rubbish." After this, the man's father brings another lot of *pombe mabea maidi*, and this is called *ya kugubika mawivi*, i.e., "to cover up the rubbish." After this they bring the *pombe ya ukegee*; if a man is a rich man (*mjimudu*) he brings nine *mabea* of *pombe*, and money, ten dollars, some eight, some six, and a goat, *mbuzi ya kiseega*, *mbuzi ngosi*. When this is completed a man is able to marry his sweetheart (*krumbu chakwe*). He waits till the day of the marriage, and when it arrives he buys the *vizulwa vya nteguzi* (customary marriage gifts), and the girl threads her beads and buys her clothes. The day of the marriage, the man takes his friend, or *kungwi*, and they go and fetch the bride, and the bride takes her friend to accompany her, but she does not say good-bye to any-

one except perhaps to her mother. Then they enter the house of the *kungwi* (the house of the *kungwi* is in a third village) in which they are to stay (four—two men and two women), and both bride and bridegroom are naked in the house. They eat nothing and only wash out their mouths with hot water. A fire is kept burning all the time.

On the second day there is also often another difficulty about the final payment. This is divided into two portions, one for the mother of the bride, and one for the father.

The mother's portion ..	..	<i>Sangua Sala</i>	4 or 6 dollars.
„ father's „ ..	..	<i>ng'ombe</i>	12 or 6 „

The third day is called the *Siku ya vizinga*, and then there is often difficulty if money is not forthcoming, or has not been paid up, and many marriages are broken up for this reason. The father of the bridegroom comes *kusema wia* with his *kiryye* and brings two dollars, *za usema wia*, or *uombeza wia*. If the money is all forthcoming, then there is no further difficulty, as a dance, *wia*, is the conclusion of a wedding. This third day there is often a great strife between the *viryye*, and the father of the bride puts a stop to all further proceedings. When an agreement has been arrived at (and it is obvious that a covetous man can make great difficulty) then the dance is fixed. In the evening of this third day they go to the bride's village, and the women cut fire-wood (*vizinga*) and it is they who indulge in the vile abusive language (*matukano*) which is one of the worst features of a heathen marriage. The fourth day is called the *Siku ya ncheeza*, so called because people come to dance all night until the morning of the fifth day. It is called *kihili cha nteguzi*, and that night the bride and bridegroom sleep in separate houses. That dance is called *wila*.

The dance is called the *kiwala*, that which is danced in the morning. The bride leaves the house and the sisters and brothers of the bride come for their fowls as sisters-in-law, *nguku zao za ulamu*, and if they do not get them, they carry off their sister and the price of these fowls, *i.e.*, one or two dollars. Before this the ceremonies in connection with the exit of the bride commence. They come out as follows:—The bride and bridegroom hold hands, and they each hold the hands of their *kungwis*. Each *kungwi* holds the hand of a child; the male *kungwi* the hand of a boy, the female *kungwi* the hand of a girl. These children are called *riambaa* (witnesses). Chairs have been placed for them, and they sit on them. It is then that presents are made to them (*wavukwa*). *Mhindi* (maize) is put on their feet and rice and *mhindi* on their heads. Then they go to the place where the dance is (*bunga*) and dance a little. It is then that

the bridegroom enters the house and drinks gruel (*uji*) (after the long fast, I imagine) and when he comes out the bride follows suit. Then after dancing they go to the bridegroom's town, and when they reach the gate (*kii*) they come to a standstill with their drums, and they say, "the dance has stuck," and the bridegroom's father must come and redeem the dance at the *kii*, and then they can enter the town with their dance, and dance till the afternoon or the evening, and from the beginning of this dance until the end of it, the two receive presents, maize, pice, and beads.

From the commencement of the betrothal until now, the two have never once eaten together, so now the bridegroom gives his bride a rupee, that they may eat together. A cock is bought and she eats fowl as a foretaste of the good things in the house (*alimbuswa*). That same evening they return to the first place, *i.e.*, the house of the *kungwi*; the money will be spent and the food eaten there. They remain there until the father and mother of the bridegroom have bought and cooked food for their son and daughter-in-law, in order to welcome heartily the stranger that she should not feel shy. The day arrives and the newly married couple put on their best clothes and come home. In the house pice and beads have been placed on the floor, and in the household basket that the bride may take them with her own hand; and she even enters the sleeping apartment, and she is told, "Everyone in the house is yours. Don't be afraid to touch or take," and then the mother-in-law eats together with her daughter-in-law,¹ but the bride never eats with her father-in-law. Another day they will go to the girl's home to have some food given to them. The same thing is repeated, for since her marriage, the girl has never partaken of food at her home. The married couple and their *makungwi* are then given food, but the father and mother of the bride do not partake thereof. The bridegroom is welcomed just as the bride was at her husband's home. Then they return and the bridegroom buys a fowl, cooks *ugali*, and invites his father-in-law, and ever afterwards he eats out of one dish (*ntezu mwenga*) with his father-in-law. He never eats with his mother-in-law.

The curious marks seen on the faces of the newly married are called *Kanju*. They are made with a stick, which is dipped in *korosho*. The man and woman have one stripe on the nose, the man two at the corner of each eye, and the woman has three semicircles near each ear, two at each corner of the eye. This is done on the *Siku ya ncheeza*.

¹ But the first time they eat at home, the mother-in-law does not eat with her daughter-in-law. It is on a later occasion she invites her separately and each calls her friends.

Relations of a Married Man.

ENGLISH.			BONDEI.
Grandfather (maternal)	...	...	<i>Baba.</i>
"	"	...	"
Grandmother	"	...	<i>Wau +</i>
"	"	...	" +
Great-uncle	...	...	<i>Baba</i>
Great-aunt	...	...	<i>Wau +</i>
Father	...	...	<i>Tate.</i>
Mother	...	...	<i>Mami +</i>
Paternal uncle	...	...	<i>Tate Mdodo.</i>
Maternal uncle	...	...	<i>Mtumba.</i>
Paternal aunt	...	...	<i>Mami ngazi.</i>
Maternal aunt	...	...	<i>Mami mdodo.</i>
Father-in-law-of man	...	...	<i>Mkwe.</i>
Mother-in-law	...	...	<i>Mkwe wa kivyele.</i>
Brother-in-law	...	...	<i>Mlamu or mkwangu if</i> elder brother.
Sister-in-law	...	...	<i>Mlamu or mwenetu if</i> younger brother.
Elder brother	...	...	<i>Mkulu.</i>
Younger brother	...	...	<i>Mruna.</i>
Sister and brother	...	...	<i>Lumbu.</i>
Elder brother's wife	...	...	<i>Wau.</i>
Younger " "	...	...	<i>Mkaza mwenetu.</i>
Father-in-law of woman	...	...	<i>Tati yuakwe vyaa.</i>
Mother-in-law " "	...	...	<i>Mami yuakwe vyaa.</i>
Sister-in-law " "	...	...	<i>Ifi.</i>
Grandson.	...	...	<i>Mwczukuu.</i>

Forbidden Marriages.

A man may not marry :—

- (a) His grandmother.
- (b) His paternal aunt.
- (c) His maternal aunt.
- (d) His sister.
- (e) His brother's wife except by inheritance.
- (f) Mother-in-law.
- (g) Sister-in-law.
- (h) His mother.
- (i) Any of his father's wives.
- (k) First cousins, or their children.

House, how Built, its Contents, &c.

If the Bondei wishes to build a house, he takes his *uhamba* and *mkomo*, kinds of axes, of which he has made the handles himself probably. The ironwork he will procure from the smith (*msiagi*). He sharpens them (*kunola*) and then goes to the forest and cuts first *kizanda* or the upright poles on the sides, then he cuts the *kombati* or cross sticks. Then he goes to get the natural string (*sigi*), then he sharpens the sticks the right length (*kusongola*), then he begins to set up the house (*to kima*), then to fix the *kombati* in their place (*kuhagalwa*); then he goes for the two large centre uprights (*pau*) and the large crosspole (*mwamba*) which will rest on them. Then he cuts some more *kombati* and gets some more cord; he notches the *pau* (*kubonga*) then fixes the *mwamba* in its place, and fastens the *kombati*. Then he cuts grass sufficient for the roof, a work of six days, to tie it one day, to carry it to the village one day, and then the roofing (*kurimba*) a day or two more. A fowl is killed and food cooked for the "roofers," *warimbi*. The new house is then swept clean, and new fire made in it (*ahgesa moto wakwe wa unindi*), the household property is removed, the hearth stones (*mafiga*) set in their places. The new house has two compartments; the inner or sleeping apartment, *i.e.*, "the gate" and the outer, *i.e.*, "*mwangoi*." Then they wait for rain, and if it rains, then the women fetch water (*watuta maji*), and make mud, that they may plaster the house *kukanda*. He then enlists plasterers (*agoncka, wakasi*). A great deal of food is cooked and then everyone, children and all, help to carry the earth to the house. In the evening they eat the food cooked. That night the man who has the plastering work (*mwenye ukasi*) does not wash. They say that if he washes, the earth will fall away (*kugomoka*) by night. That is a *mwiko*. And if his wife is with child, he will not enter the mud pits, if he does, his wife will die in child-birth.

The contents of a house are generally as follows:—

BONDEL.	ENGLISH.
<i>Tala</i>	= barn.
<i>Sazi</i>	= beds.
<i>Kuni</i>	= firewood.
<i>Mafiga</i>	= cooking stones.
<i>Mabiga</i>	= watering pots.
<i>Tuli</i>	= mortar.
<i>Mtoko</i>	= pounding pole.
<i>Hoya</i>	= axe.

BONDEI.	ENGLISH.
<i>Uhamba</i>	= hatchet.
<i>Gembe</i>	= harrow.
<i>Lungo</i>	= sieve.
<i>Kihungu</i>	= small ditto.
<i>Ntezu</i>	= little basket.
<i>Ngahu</i>	= big ditto.
<i>Zomolo</i>	= big spoon.
<i>Mavi</i>	= stirring spoon.
<i>Nyungu</i>	= cooking pot.
<i>Luiga</i>	= to serve up food in.
<i>Ngata</i>	= cups with handles.
<i>Uhara</i>	= for stirring rice (<i>kubulugia</i>).
<i>Luiko</i>	= little spoon.
<i>Hagio</i>	= broom.
<i>Nyungu ya kuceleka</i> ...	= cooking pot for <i>twanged mhindi</i> .
<i>Nkoba</i>	= medicine bottle.
<i>Kiti</i>	= chair.
<i>Lenge</i>	= a cup for tapping <i>pombe</i> .
<i>Kisompo</i>	= a pot for keeping <i>pombe</i> in.
<i>Kasi</i>	= a cup for drinking <i>pombe</i> from.
<i>Mwiza</i>	= a straw for sucking <i>pombe</i> .
<i>Bea</i>	= a large cup for carrying <i>pombe</i> in.

A man will probably build after his marriage. The reason of his not building before is, that the marriage may fall through in any of the ways stated above, and in that case the house would be of no use to him, as he would sleep in the *Bweni*. He will be helped to build chiefly by the *kungwi*, or father, or father-in-law. If he is lazy he will live in a *huzu* or deserted house. When the house is finished, the female *kungwi* will sweep it, then they bring in the beds, and then the woman makes *ugali* with the newly kindled fire. New fire must be used. It cannot be taken from another house. Everything is done by the female *kungwi* perhaps as an object lesson to the bride.

In the morning the woman gives her husband water to wash his face with, and then she goes to the stream to draw water. She has flour ready from the previous day, and when she comes back, she cooks *ugali* with *mboga* or *nyama*. When the husband has finished eating, he goes to the fields (*tanga*) and the woman will *twanga* (pound) and then go and cut firewood (*kusasa kuni*) and does not return till midday with *kuni*, firewood, and *mboga*, vegetables. Then she *bundugas* (pounds), and cooks *ugali*, and her husband comes and eats. If she lives with her husband's people, she will serve up food for herself and mother and father and sisters-in-law (*ntezu mbili*, two dishes); if she lives at home, she cooks for her own family. When this is over she goes to the

fields or will *twanga* and *Bunduga* for to-morrow. In the evening the mother-in-law will cook and so the work is divided. In the evening they gossip (*matamwizi*).

The man's work is that usually falling to man's lot: field labour, carving, house-building, smoking, going to market, &c.

The Market Day.

If the market is near, the woman will go and the husband supplies the funds. She will probably buy some of the following articles:—Indian corn, millet, rice, cassava dried, (*makopa*) bananas, *kunde*, *ngogwe*. She will buy also two or three pice worth of shark, and two mikate of tobacco. She will sell millet, maize, semsem, dried cassava, bananas, *poswe* (black beans), beer made of sugar cane or palm wine. The proceeds go to the husband: the woman has no money.

If the market is far, generally the man will go alone and buy and sell the same things, possibly in larger quantities. If he pays a visit to the beer department, he will possibly get drunk, fight, praise himself and his tribe, and get into mischief.

The day before, the women will make the beer from the sugar cane (*pombe ya niira*) which is not intoxicating. They will strip off the skin *kuseza*, and then crush the cane in a mortar; the juice is placed in a *biga* with water and covered. In the morning it has effervesced. It is sold at a pice a *bompo*.

Togwe is another favourite beverage sold at the market. It is made of porridge, honey or *chagi*, viz., *mhindi* which is very old and dry. The seeds are removed and the chaff mixed with the *ugali* in the morning; in the afternoon it is sweet, in the evening sweeter, and next day it is sold. It does not keep.

Omens.—In connection with market.

If in going to the market a single person is met, it is an omen (*ndege*) and they will return angry, thinking that they would have had bad luck.

If they go to Mambo Sasa from Mkuzi, and see a *koni* crossing a road, they will return. It is an *ndege*.

If on the road they hear a crow (*kunguru*) cawing they return; it is an *ndege*.

If they hear a *kunga* calling on the left, it is an *ndege*, and they return.

If they reach cross roads (*Sia mpanda*), and find grass placed for an *mzimu*, they add to the grass, if not, they will not drive a good bargain.

If they see anything placed in the road, they will not pass over it but on one side, and if it is repeated the road will fall into disuse. If accidentally the thing so placed is trodden on, there is great fear and often subsequent fever.

They wear the following charms :—

Herizi ya biashara = market charms.

Mpingu for driving away snakes, &c.

Herizi ya mkomo, against witchcraft.

If you go to the market, you put on your best clothes, perhaps one on the head as a *kilemba* (turban), and another over the shoulder. The market is a great occasion for *maneno* (discussions) and secrets.

In old times a powerful chief could levy toll (*kusanguza*) at the market. It was simple oppression. They used even to refuse leave to cut the *mtama* or fetch basket-grass (*mabamba*) from the *nyika*. Resistance implied war.

War Customs.

When war comes, the first who hears it, climbs up to the top of the house and beats the drum with one hand, and the people assemble where the drum was beaten. A drum is beaten in every village, as soon as another drum is heard. Then everyone goes where the first drum sounded, and people cry *kondo* (war) all over the country. All the women and children enter the forest with their property, especially the *kifun* (i.e., the *nkoba* or basket) with all valuable property (money and beads). The warriors take their arms, put their amulets on their arms and neck and face, and put on their *bwaza* (i.e., feathers of ostrich). These charms, each supposes, will keep him safe, and even if he is struck by a bullet it will not enter. There is also another charm, A man is scarified all down the arms, and on the breast and back, and then it is stated that no sword will cut into his body. Again, if you go to a great doctor, he will take water and put it in a *chungu*, and put powder into it, and every man will drink it. This is called *mdundugo* or *tugo*.

Then they leave the village and go to the seat of war, and on approaching they assemble together, and a *koba* is brought out and every man is smeared on the face and given medicine, and is licked by the "*fundi*." Then they will separate and each band (*mwoza*) goes into a different direction, and then the battle takes place.

If they conquer they return together and sing songs (*waimba zumo*).

"*Kishundi mlima mazoea,
Ne ndege nkulu,*"

i.e., just as the *kishundu* is a great bird, and is accustomed to the mountains, so we are accustomed to war; or again :—

*Msami ukasama, usamie si ya Bonde
Ya kenya ina angaia ;
Mkwavi karala ngala ;*

i.e., come and live in our land. That yonder is glowing with the fire of burnt villages. The *Mmasai* has donned his peaked hat, *i.e.*, we are like the Masai.

Then they enter the village, *wagea kani* (*i.e.*, entering the village shouting),

The mgea kani asema
Si ihola limani ugali mkada;

i.e., the land is at rest, till and eat.

If a man has been killed, when they return they sing as follows:—

Kigua changu mna kani
Kigua ni ani.

i.e., my *mtama* (millet) has a limit; who has eaten it? Then they go to the house of the dead man, fire their guns, and take away the grass that slopes over the door; and so the wife knows that she is a widow. Then they go and tell the *wazee* (old folk). They are asked, *Nahagone* (*i.e.*, Is it peace)? *Hagona* (It is peace!) they reply.

If a man has killed an enemy in battle, when he returns with the spoils, he gives them to his father and then lies down on the *swago* (*i.e.*, banana leaves dried). For seven days that is his bed, and every day he climbs up to the top of the house in the morning. *Alinga* (he boasts), and names the name of the man he killed.

If he reaches a spot where there is *ukingili* (*i.e.*, the dance of men who have killed their enemies in war), there is meat cut up, and placed in a *kihungu*. He *linga's* again, and takes the meat with his sword. If there is not meat, he takes a branch, and for every man he killed he takes off a leaf.

If, however, they are defeated, the warriors come back one by one, having hidden themselves. If victorious the women greet them with *vigelegele* (cries of joy) and shave, not having done so since their husbands went to war.

Hunting.

Hunting (*kuhita ukala*) is a very common amusement or occupation among the Bondeis, and there are one or two curious customs in connection with it.

There are two kinds of *ukala* = hunting.

Ukala wa bunduki = gun.
Ukala wa uaru = net.

Ukala wa Bunduki.—If they go with guns in the morning after an *ngoma ya ukala* (hunting dance), the hunter appeases the spirit of his ancestor, *avika* (sacrifices). He takes a fowl

in the left hand, and plucks off the feathers of the neck. Then if his father is dead, he mentions his name, and says:—

“Baba n’ganya kagone
Miye nahita ukala
’Kakome na ’kakoma
’Kauya neza kukutoea ngoma vituhu.”

And the *mtani* (cf. *suf*) answers, “Pepa!” Then the fowl is slain and left, and its blood smeared on the guns. If the *kuku* (fowl) falls dead on the right side he is told, “you will kill a male beast,” and if it falls on the left side, he is told, “you will kill a female beast.” He is given his gun by his mother, wife, or eldest daughter, and they say, *Kakome nyama Tate*. (“Make a good bag, father!”)

The wife will be given the following *miiko*.

- (1) Don’t wash (the absence is only a few days).
- (2) Don’t let anyone hoist your *mtungi* for you.
- (3) If your back is dirty, don’t let anyone rub it.
- (4) Don’t flirt.

When they kill an animal they skin it (*kuzula*), and then they cut twigs with forks and make a wicker work (*fravie luago*), and put the meat on the top. Then they make a fire and dry the meat. When the hunter returns, he plays his flute (*filimbe*), and everyone knows that he has killed.

When he nears his town, the women go with *unga* (flour) in a *tezu* (basket), and put it on his head and back and make the *kigelegele* (cry of joy), and ask him “*Fundi, Maingo*,” and he answers “*Zifa*” (we killed), or *Maingo mwaya*. *Zifa mwaya* = we killed, my friend. He then enters the town and plays at his door, and the meat is cut and put in a *kihungu* and everyone will be given a little. They sing:—

“*Kipuna mwana, nyama* } “I have had a good feast
Wantu wapuna nyama.” } of meat.”

The next morning he calls his friends and the same words are used, and then the friends are given each a bit.

He will then praise his *mzinu* and gives him an *ngoma* (a dance), *ngoma ya pala* (*pombe*), and a great many come, and the same *vika* takes place, and the *mtani* answers as follows:—

“*Pepa ! pepa ! wee mgosi msikie m’ana* } “Peace ! Sir, hear your son : if he
Akahita ukala, akakurika mwenke } goes hunting, and sacrifices to
Nyama, naho aitoee hehi hehi.” } you first, give him good sport.”

Ukala wa Nyaru.—To make a net a man goes to peel the bark off a baobab (*kukumba uya*), and carries it to the village and dries it, and when dry, he (*kunyukula*) and then weaves it (*kuluka*), until the coils (*tusi*) reach a man’s thigh. He then knits it (*kutaiza*) for three days, and measures it four or five cubits (*pimva*).

He then goes to the doctor to get charms (*pingu*), by which to draw the animals with, when he drives them (*kuunga*). The doctor is given a fowl, and every time he goes to hunt he takes the amulet, and censes it. The net must never catch a fowl, if it does, the Murko of the net is broken, and the fowl is plucked of a feather (*yakuntwa lyoya*), and the feather is tied to the net. When they go to hunt a trumpet is blown, the hunters assemble, and when they arrive at the hunting spot, the trumpet (*gunda*) is blown again, and they assemble and make their arrangements. They then enter the thick underwood and untie the net (*kuchopola*) and lay their trap. If they kill, they divide—if it is only a gazelle (*pala*) the owner of the net takes the head and a leg, and the person who helps him gets nothing—if it is an antelope (*funo*), the person who killed gets the neck and a leg, and the person who helps takes a loin (*gwidi*), and a third helper the breast.

If you hunt in another person's country, you may have to pay even as much as a tusk of an elephant.

Habari ya Mashamba.

A man procures a shamba by informing his father that he wishes to cultivate. His father will then take him to his own plot of ground, and separate him off a portion (*kumhakia munda*). That same day the man will till a small part of it (*kiwaluko*) to warn others off. The next day he and his wife will turn the soil over of a large plot (*mgemo*). After that he builds a small hut (*kumbi*) for his wife to put her things in, and when the space cleared is large, they burn the rubbish. When it rains, they take seed and sow, then they wait some time, and then when the seeds have grown, they clear away the weeds (*kuhulia*). During this time (*vhulizi*) they remove the household utensils (*tanu*) to the shamba, and stay there all day, coming away (*kugotoka*), at night. When the clearing is finished, there is no more work until the corn is ripe, and then they go to taste (*kulimbula*); then they break off four or five cobs (*mapemba*) and come with them to the space in front of the town, (*tang' andei*), and there they build a tiny house (*kazumba*) and put the young corn inside. When that is over they are able to reap (*kubonda*) and eat thereof. They summon (*kugoneka*) their relations to come and help them reap. Everyone brings their basket, and the reapers (*wabosi*) receive each as pay a basket of Indian corn, and every day a reaper receives a basketful for his reaping (*ubosi*). If they have finished reaping in the evening, the maize is announced to be ready for carting (*kugonekelwa*) that the people may carry it home (*kutula*). The next morning at dawn (*kukacha wakelo*) the carriers (*watuti*) go to fetch it, and a

whole *nyungu* of *mahede* (i.e., unpounded corn) is cooked for them, to be ready on their return. The next day (*kelo 'dakwe*) the corn is put in the barn (*talai*), the large one over the sleeping apartment. *Msele* is put in the small one (*kihala*), that is the bad cobs rat-eaten, &c.

There are two kinds of houses built to the *wazimu*. (This is denied by some.) One is the public one (*tang'andei*), the object of which is to avert sickness. A man can build a private one on his own *shamba*, this is also a species of medicine to drive away pigs, &c. If a vow is made (*kuika ngadili*), it will be made at the grave of the dead.

Millet or Uhemba.—They cut this (*kusenga*) and lay it in rows (*misala*) and then they remove the seed (*kufyora*) and build a barn (*kihala*) to put the millet in. When this is finished, they buy meat and prepare food and summon people to thresh the millet (*kuheta*), and the next morning they will kill the fowls for the threshers (*nguku za uhesi*) and the men go to thresh. When they reach the spot where the threshing is to take place, a woman brings out the millet and puts it in the sun (*uzua*); the people go to cut sticks. When they come back the millet is dry and the people go round it singing:—

<i>Mombwa Mombwa, Mombwa ndiye Muungu,</i>	} viz.—“He who is prayed to is God.”
<i>Yee eh</i>	
<i>Mombwa ndiye Muungu.</i>	

Then they thresh: when they have finished, they shake out the chaff (*kukung'unta masuya*) and put it on one side and collect the millet (*kukusakusa*), wash, and go home, and feast. The food is divided out by a woman who is called *kivyee* (gossip?); she is given the breast of the chicken. Then the women sift (*kuheta*) the millet, and call the men to carry it, and when they reach the town the carriers are given each a *pishi*. The men then put it in big bags (*vikanda*), and the next morning the bags are put in the house, and each helper gets a cake of tobacco, or if he has not much each person a piece *nyungu*.

Mpunga.—*Rice*.—If it flourishes (*kubwita*) and begins to ripen (*kusanula*), he builds a house (*ingo*) or platform rather, and calls his children to help him drive the birds away. When the rice ripens, he calls the *wahuluzi* (the shredders), and they shred, and in the evening are given a basket full of rice as pay, and so on each day. Then they thrash the rice, and the rice is pounded, and then sifted and put in large baskets or sacks, and the sacks are then put in the house. The helpers are given tobacco.

Uruta.—*Semsem*.—This is cut (*wasengwa*) and tied in bundles

(*masasa*), then poles (*siki*) are cut, and he makes a platform called *ukuko*, and sets up the sheaves of *semsem*. Then he waits three days or so, and on the fourth day he goes (*wa musu*) to see if the *semsem* has split (*ubabaluka*). He then comes with his *utanga* (matting) in order to get the seeds from the pods (*kutahisa*). Then they sift, and the sifters get an *mpisi*, and the *semsem* is put in big baskets in the house. Those who help are given tobacco.

They also sow in their fields *kunde*, 'poswe, *mbaazi* (beans of various kinds), cassava (*manga*) *matindi* = bananas, *kungu*, *ngogwe*, *mankutu*, *viungu*, *migua*, *kitembo*, *koko*, *bogwe*, *bahau*, *ushele*, *uyungu*, *bodwe*, and *tango* = beans, pumpkins, sweet potatoes, cucumbers.

Games.

Bau or Kusegiga Usolo.—A board containing fourteen pockets, seven on each side, and in each pocket four marbles. The game is to rob your adversary of all his marbles. He begins by taking all the marbles from one of your pockets, and one of his, and putting them where he pleases. You can do the same or proceed to play, which you do by taking up the marbles from any of your own pockets which will last until your adversary's side is reached, one marble being dropped in each pocket until all in your hand are played out. If you fall into an empty pocket, you die metaphorically, and if you fall in any of your adversary's pockets where there are three marbles, yours making a fourth, it is a child (*mwana*), and your adversary cannot touch that pocket again. If you fall into *any* pocket containing any marbles, you take them all up with your own last one, and so go on playing till you fall into an empty pocket or make a *mwana*, *kusoma mwana* (you get a child). Your adversary then begins to play. When a *mwana* has been made, whoever falls into an empty pocket on his own side takes all the marbles in the corresponding pocket on his adversary's side, unless it happens to be a *mwana*. It is naturally a great advantage to make a *mwana*, because every time you and your adversary play, the pocket is being filled and cannot be touched. When the first round is finished, one having no marbles to play, he who has fewest fills his pockets as far as he can, and the other then fills the corresponding pockets with the same number. The man who has most marbles plays first. It is a very good game, and requires a great deal of simple calculation.

Kusi.—This is a game played with a loop (*kitasi*) made with *ung'ongo wa mabamba* (that is, the leaf of a kind of palm); the aim is to catch a bunch of short grass (*kikuse*) in the loop. They

make sides, and when one side catches the *kikuse* then there is a struggle, each side trying to get or keep possession.

Gongo.—They play this at 3 p.m. The men and women come together, and sing songs (*zumo*)? or (*sokolwe*). When they get to a village, a man comes out with his bow and a shield and a stick, and gives them to the strangers, and then he takes an *ukuti* (stalk of cocoa-nut leaf) and the strangers ward off (*kuwecha*) the blows. He has to do this three times, to buy the road (*kukombola sia*) and enter the town. When he enters, the man who struck him (*awecha naye*) wards himself three times. If the stranger is not struck, he is carried on their hands.

Gong'onda.—In the evening, there is a great assembly (*welusa*) in the open space (*wazoi*), and sing—

Kade, mkulu Digo
Ohai
Kade manga Digo } = The Digo is a fine fellow. He eats cassava.

They walk round the whole town and when they reach the open space they drop the song (*kugwisa*), and the women stand on one side and the men on another. A man then enters the circle (*bunga*). A woman joins him, and then both clap their hands and return to their places, and so on. I am told that there is no harm in the game itself.

Kidanto.—The young men wash their clothes, they stretch (*kuwamba*) two drums, a small and a large one, and make two drumsticks (*makoto*) with *ng'ongo*. They then make an arrangement (*kugonekana*) to meet on a certain evening in the open space, and when they come together, two then beat the small drum first and afterwards the larger one, then they divide into two sides (*kupangana mahundo mairi*). In the centre there is left a *pengo*, i.e., space, and those who beat the drums stay in the middle; on one side two sing, and on the other side two. They sing as follows—

Ni mkindi malegeza bewa
Yee ye oh ye.
Oh sooni, mkaule Mzungu Mdachi
Azenga geeza. } “Refers to coming of Germans.”

When that is sung, they sing—

“*Selubula kakoma Mshambala, Hai, yaza,*” (“Some local squabble.”)

Selubula is a slave of a chief at Magila, called Sekihufya.

Kadege.—A children's game. They hold hands and sing—

“*Kadege. Yee. Hai yaya. Yee Ye. Hi yai, yai, yai yaya. Oh Haya.*”

Mkabala.—This is a dance with bells (*mbuge*). They have bells on their hands, and rattles (*magong-ongo*). They put on their

bells on their feet at the entrance to the village, and hold the rattles in their hands. A small boy carries the drum, and they raise their song (*kukweza wila*). When they reach the town, they go round the village, and when they reach the *bunga*, they then drop the song. They dance and the women shake their necks (*wagea singo*).

Lula.—A game apparently like fox and geese called from *kululana*, to pull one another. It is said to be a good game, and to be played by the unmarried. They sing—

*Fungo eh fungo. Semombwe, ni ani,
Abulute fungo.*

Duma.—An old dance played with *magosa* = the old bells, before *mbuge* (iron bells) were introduced; made with *mabamba* worn on the legs. They put Indian corn seed inside. It is played now, because they are afraid of small pox and *Minga* = Spirit mountain.

Wau Mangoto.—A good dance of children. They sing—

“*Wau mangoto agenda Kigwang, gwang, gwang, gwangwa.*”
= “The old sheep goes a gadding.”

Magome.—Another good dance for children. They sing—

“*Magome ee magome 'kulandala
Mkaza mtumba natamani kumsola
Hada kamsola, ukiwa unengia.*”

The meaning is that the Zeguas marry their aunts, but the Bondeis do not.

Msewa.—Msewa is a tree that bears a fruit like the common Bondei medicine bottle. These are taken and bored and the seeds taken out, and small stones (*sangalawe*), are put inside. Then they tie in string (*uzige*), and wear them on their legs as bells.

Makolokocho.—Is a tree like a banana and bears fruit like broad beans. People pick these up and bore holes in them all and string them. Then they dance with the *makolokocho* in the left hand and a rattle in the right.

Kibwamba.—A child's dance. They stand in rows and sing—

“*Ho, kibwamba, Ho mwegalano kaya.*”

Kibwamba is said to be a body of people, and *mwegalano* a “company.”

Mamuwaya.—A child's dance. Boys and girls apart. They hold hands and sing—

“*Mamuwaya, mamuwaya, kibenenku.
Wantu wasoigwa ni wagosi
Mie nasoigwa ni mkonta ngungo kebenku.*”

Mamwaya is a "beggar." *Kubenenkuka* is to "totter."

Kibeenta.—(*Kubenta* = to remove.)

A child's dance. They sing—

"*Kibeenta yah! Sntagwa haikamia,
Kabwanga kazize kanimoga ngonja.*"

Kirata.—A child's dance. They sing—

"*Mwenda ungeja kiwata
Hiye Hoye, mwenda ungeja.*"

MPila.—Whip top.

Mwira wa Mgunga.—A child's dance. They sing—

"*Mwira wa mgunga wanitunga
Mwira wa mgunga.*"

Medicine.

If a man wishes to become a doctor, he first of all goes to a fully qualified medical man, and expresses a wish to be his assistant. The practitioner will then tell him he must look for a young cockerel that is just beginning to crow (*ikunkumukayo*) and bring it. When he has found it, he comes and is scarified all over his body, and the cockerel is called *uamulo*. When this is over, he is taught the names and contents of all the bottles,¹ and how to lay the divining rods (*kwika miamulo pande*). When the doctor has taught him all this, he tells him to follow him on his rounds, and the assistant does all the work of scarifying and charming (*kutabana*) under the practised eye of the *fundi*, but the fee (*kolo*) goes to the qualified doctor.

All medicine is divided into two principal branches, Surgery (*uganga wasengela*) and "Exorcism" (*uganga wapepo*).²

Uganga wa sengela.—He cures (*kulagula*) the sick. He asks the sick person or his friend the symptoms (*humavyo*). If the patient (*mtamu*) has bad dreams and talks in his sleep, the doctor tells them to bring two fowls and a dote (four arms) of cloth, a hoe. Then the doctor consents to treat the patient on sight of his fee, and they go to a retired spot in the forest (*ndala*) and the sick person is scarified, and one fowl is killed and cooked. The sick person has medicine rubbed over the cuts, and then they eat and separate. The doctor takes his

¹ Medicine bottles:—

nkoba ya richuka.

" *dulazi.*

" *ugwa mutwi.*

" *kialu.*

" *safara.*

nkoba ya uzuzi.

" *kidashoe.*

" *utiizi.*

" *mikomo.*

² I am told that a greeting to a doctor is *Taiye!* and the answer given is *Na Muungu*. The meaning is that the doctor is greeted as a healer, and he answers—
"A healer, yes, by the help of God."

fee, but if the patient has disturbed nights still, they go to another doctor. In this case the medicine bottles have been charmed, but the sick person is not. But if the medicine does benefit the sick person, he is told, "Don't be shaved until you have got me a dollar and then I will come and shave you myself. If you do not get me the dollar you shall remain unshaved." When the dollar is forthcoming, he calls the doctor, and when he comes, the sick person is told to bring a basin (*luiga*) of water, and the medicine is put in the water, the same medicine as before, and the water is put on the head of the patient, and he is shaved, and if there is any food which the doctor forbade (*kuziza*) him to eat, that food is brought, medicine is put in it, and the sick person eats it. Then a fowl is killed, and the doctor has food cooked for him; is given his dollar, takes down (*hasula*) his hand-bag and goes home.

Kutabana dulazi.—This is an abscess especially dangerous where there is ignorance of the anatomy of the body. The natives call it "fitina" = strife, so as not to frighten their patients. As to the charming, I was informed by the natives that the main motives in the "mganga's" heart were "cunning and pride." Its main object is to remove fear. But a doctor will charm himself in case of illness.

The treatment of abscess.—They use the roots of the following trees:—

Sagampa, a creeper.

Mtoa kondo, a plant.

Mvengele, „

Mtula, „

The roots are dug up and pounded together, and mixed with *tula*, and then plastered (*kubadika*) on the place. Only a small place is drawn. The medicine stays until the evening; if the abscess is ripe, it is opened (*kutumbulwa*). If not, the medicine stays on until the next day, and then if ripe, some one who knows how to open an abscess is called, hot water is prepared, the sick person is surrounded in the *mzingwe* (part of house) and the operation performed. Then castor oil, *maruta ya nyono*, is put on the wound (*kionda*).

Kulagula nguwa mtwi, i.e., the treatment of a person subject to "fits." They kill a sheep, and then the sick person is shaved, and the hair is taken, and the foam (*fulo*) from his mouth, and put inside the head of the sheep, and then a pit is dug at cross-roads, or where there is a tall tree, and the sheep's head is put inside. That is symbolical of the burial of the head of the patient (*kugubika mtwi wa nguwa mtwi*).

Kuhuma sanyo.—Various diseases of the stomach are comprised under this name. The patient is not *tabana'd* (charmed). He is given as medicine the leaves and roots of trees, and is

forbidden to eat papaws and sugar cane and pumpkin and things containing much salt.

Some of the medicines are:—

The roots of the *mdingida*, cooked with egg.

The leaves of the *semsem*.

The leaves of the *mfune*.

Kutungwa.—Any pricking, stabbing pain.

A man is scarified, and has a very smarting medicine rubbed in, that the smarting part may be rubbed (*kusagasira*). Then he is furnished with charms, and they are placed on the tender or painful spot, and he is given the same *miko*, not to eat bananas or sugar cane, or papaw or pumpkin, or any sweet thing (*kintu che mwie*).

Nkoba ya kialu ("Madness").—In such cases, the doctor comes at night that the mad person may not see him. If he sees him he will not drink his medicine for fear of being bewitched. The doctor keeps himself in the background, and a sheep is bought and taken to cross-roads, or the middle of a road, or to a tall tree, and if the mad person is obstreperous, they shave him in the village, and the hair is put in the head of a sheep, and put in a pit to cover up the madness. The medicine is then given to a person who is liked by the mad person, and put in his food. If he gets well, the doctor comes and shaves him again, and is given a dollar.

Safura ("Dropsy").—The doctor will tell you to fetch two fowls and a hoe and *kaniki* (*pana*). He is also told to bring pepper, ginger, mtama, and bitter oranges. Then the doctor comes with his medicines; the *mdala* (kind of tree), tree and iron filings (*mawi ya chuma*). The millet is then roasted (*kukazingwa*) with the pepper, then pounded, and the powder is put in the patient's porridge. One fowl is killed and its blood is put in the *vno* of the sick person. The *vno* is the leaves of the *msuza* and *msisimisi* which are boiled, and then the patient is steamed. Every day the roots of the same tree are cut up and boiled and drunk. The doctor then takes the cloth and the other fowl, and gives the sick person "miko" like those of sango, all fat meats, &c. When the cure is effected the doctor gets a dollar, and removes the ban (*kuziusa*) on certain articles of food.

Nkoba ya uzuza (Thief hunter).—If a man loses anything, he goes for a "patent finder" (*mzuza*), and asks him to find the lost article. The doctor agrees, on condition of receiving a *kaniki* (*pana*). "It is my *fyaso* (flap), for *kufunda*, (tucking in); a cloth to tuck in (*kupiga winda*)." When the cloth is forthcoming, the *mzuza* puts it on, he takes *mange*, i.e., his medicine and smells

it, and tracks the lost article in the houses and in the fields. If he finds it, he says, "give me *fungula mfuko* and *funga mfuko*," bottle opener and bottle closer.

Nkoba ya utizi (Treatment for hypochondriacs).—He puts any powder in the bottle, and cuts a place in the head, or any place said to be painful, and then smears the powder over and binds a rag over the powder, having first placed inside the rag a bit of glass or finger nail, and when he removes the rag he shows them the glass, &c., and says, "This was the cause of your illness."

Ndele.—A kind of love potion, to make a man love a woman.

Ngohe ya simba.—A doctor told me if I killed a lion and gave him the eyelash, he would make medicine and put the eyelash in my hat, and make me invincible in all matters requiring persuasion.

Kuumika.—To cup or let blood. This illness is not charmed, the blood is buried. The blood-letting is performed with the horn of an ox, by exhausting the air, and then sealing up the horn.

Nkoba ya padu (Discharge at the ears).—Its medicine is *mani ya mvilu*—*na msuza, na rumbasa*, and the patient is steamed. The medicine drunk, the roots of *mtoa kondo*, and *mvilu, na mda rikali* = trees.

Mantumbwi.—The "mumps."

Duda.—The small-pox.

Kutabana.

It is not exactly easy to discover the motives of the *mganga* who *tabana's* (charms). He evidently believes in the efficacy of the treatment as he *tabana's* himself. It is one of the commonest forms of treatment in certain cases of sickness. It is supposed to have a special efficacy in those cases where there is fear, as it quiets the patient's mind. Here is subjoined a few cases of "Charming," and the words used as specimens.

If a man is injured or bitten by a snake, the *mganga* sings or monotones in very rapid speech the following words:—

"*Madaula ! Madaula ! Madaula !*
Ni mlegeezo. Wagamba, miye mahulo
Mada usunga.
Puu (he spits). Wee Mayangi.
Nagamba ni moza, wagamba Pu Ukongulu
Kuna mvyete ambigwa Kimela
'Agamba usungu wa nyoka walawahahi
Wagamba, ulawa Kamba
Ukalawa Kambu, tiugea gozomwa
Wamgamba, Mgambeni, Kahona.
Kanga kataga kawaluka."

The *madaula* is a tree with thorns, and so synonymous with the snake. The meaning is, you snake, you slacken people's strength. You say, "I am an *nkulo*, I eat poison." The doctor then spits and turns to his *nkoba* and says, "*Wee mayangi* (i.e., the bottle). I say he destroys people. You say over there in the *Uzegua* country there is a woman *Kimela* who says the poison of the snake comes from the *Kamba* country. Where! (contemptuously). You, oh snake, say that it comes from the *Kamba* country. If it comes from the *Kamba* country we have driven it away. You there tell the sick person he is well. The *kanga* (guinea-fowl) has laid and sat" (i.e., the doctor has finished his work).

Kutabana nyoka.—This is one of the most common forms of charming. *Nyoka* is a sickness, supposed to result from the fright caused by seeing a snake. The person trembles. If a man has ringworm (*viba*) or a wound which does not heal, or slight blindness, fomentations are sought for, i.e., *majani ya mnyonga pembe* and strings of bark cut in small portions (the bark of the *mumba* and the *mware*), and these are put into a water-pot with water. The custom is to strip the bark off the tree (*kubandula mti gome*) at sunrise and sunset (*lawio na sweo du zua*), the meaning of which is that the sickness has its beginning and its end. Then the *mganga* brings his *nkulo*, charming sticks, made of the wood of the *mkula* (they make *riangwi*, viz., a musical instrument, with this as well), and every day the sick person is charmed, morning and evening, for seven days. The sick person is daubed all over with the coloured mud made from the *nkulo*. The *mganga* asks for a fowl or two, or perhaps a sheep. The *ngoka* is said to want these.

The words are as follows: (A preliminary spit)—

"*Wee Swia wee moma, wee mbali wee nondo wee mungumi* (see serpent).
mfumwa wa nyoka; machole yakemu kidama,"

(i.e., Even the birds say you despise people).

Again:—

Inga mwaya nyoka nkulu nondo
" " " " *shatu*
Msuza, mqua mzize¹
Kashala kazize wee funza
Nyoka kulu agenda bahari mgumi.

Or again:—

Wagona mwe dilundi ki panga
Takinga na zua,

i.e., You are sleeping in this injured leg. It is not a cave such as you love for its coolness. We put our leg in the sunshine.

¹ All these *msuza*, &c., are worthless things. The *mganga* is despising the snake.

There is also another custom. They make a frame-work of sticks (*kungo*), and place on it a chaplet (*kabundu*) of grasses.

All these “*msuza*,” &c., are worthless things. The *mganga* is despising the snake.

The sick person sits on it, and is charmed for *nyoka*. If the person gets well, he buys a sheep and goes with the doctor to a *mkuyu*, or *mzuli*, and is shaved, sitting on the sheep, which is then killed and the meat eaten.

There is also another custom in connection with this form of charming. The sick person, if better, takes the medicine bottle in his hands, and stretches both hands and legs alternately in the direction of the *mzitu*. If the joints crack it is a good sign.

Kutabana ndege.—If a child cries very much at night, a doctor is summoned. He takes the child in his arms very early in the morning (*kelo kelo*) and charms singing:—

Pu ! namba ni pulisi

Pu ! namba ni mtula kondo.

Pu ! namba ni mtula ndege zose

Ukazitula bassi, mlala ndege, mgosi wa ndege.

The meaning is, the *pulisi* is a tree which bears a seed-pod, which splits and out comes wool which is borne away by the wind (and so the sickness is only a passing affair).

Mtula Kondo.—A little tree used as medicine to break up war, and so the doctor breaks up this sickness.

There is another medicine for a crying child.—A cooking-pot has seven chaplets of common grass (*koka*) put into it with water, and is then set up *ng'ongoni*, i.e., on four sticks. Every time the child cries, it is smeared with the medicine.

This finished, the doctor breathes on the child, and gives them a piece of the tail of the *komba*, and it is tied to the hair of a child.

Kutabana Pepo Mkulu.—If a man is ill, and his head hurts him, and he feels very cold, and does not like to leave a place where there is a fire, and his body trembles (*kugudema*) he is told that it is a *pepo mkulu* (big devil). A doctor is called who can expel a big devil, that he may come and thresh him (*eze amhute*). He tells them to find a white chicken. Then the devil expeller comes and puts water in a cooking pot and the leaves of the *mtaawanda*. He holds a fowl and a broom in the right hand and the leaves of the *mtaawanda* in the left. These leaves are dipped in the water and the sick person is sprinkled with them on the head and chest and legs and back, and then the charmer sings:—

Semkumba, Semkumba, Semkumba

Kumba pepo uleke walimwengu.

Mgosi wa jinini, mlala wa jinini

Kumwona akada papayu, mlekele

" " *mgua,* "

" " *matonte* "

Gambo da Mlinga kidingia pogani kidilawa pogani

Chamba ni mtoho 'kavhindwa uta

Ukahindwa uta, 'Changa ndima

Changa kiozo.

The meaning is :—

Father of snatchers, snatch devils not men, male devil or female devil. If you have seen him eating papaw, sugar cane, or bananas, let him be. I went right into Mlinga and out the other side. I said, it is as a pounding pole, you cannot make a bow of it. If a bow is made of it, what a work and wonder is that, *i.e.*, miracles don't exist. How can a devil enter into a man ?

As he charms in this way, he stands behind the patient, and when he has finished he turns round to face him. Then he takes the pot of water, and places it in the leaves and ties the fowl to the bed-post at the head. Then a *heku* (an old lungu) is placed containing seven cakes of ashes, seven bits of black sugar cane, and unripe pineapple, and the sick person is charmed seven days. The seventh day in the morning, the *heku* is taken and exposed at cross-roads. The chicken grows and the sick person is not shaved until the chicken has become a fowl, then the doctor and the patient and the fowl go where there is a tall tree, the fowl is killed, the patient is shaved, the fowl cooked and eaten on the spot. Then they return, but do not look behind them.

Divination.

In sickness people often resort to the diviner (*mtoa miamuro*) to know the nature of the disease. He divines with a basket of marbles. The diviner merely looks at these, and then tells the inquirer to spit on them, putting his hand into the basket, and says what is the matter with the patient. The diviner then takes them and places them in fours, and then in threes, and then shows the inquirer the marbles in fours, and says, "Your patient has been bewitched, go to a witch doctor." He then shows him the marbles in threes, and says, "These threes are his health. Look out for a doctor to treat your patient. If you don't, your patient will die."

Exorcism.

The Devil Doctor (Mganga wa pepo).—The devil doctor keeps in his house his drums, of which there are five kinds—Champulo, Mkinda, Mgora, Bumumbu, and Upatu. He also keeps his bottles and his books full of pictures of devils and oxen and

fowls and doves and red cloth (*nguo za suli*) and blue cloth and his *mbega* (i.e., monkey skins) and white cloths to exorcise in, and his incense (*ubani*). Only a fully qualified exorcist will possess these. When summoned, he calls his drummers, and in the evening they carry the drums to the required spot with the bag and lamps and trumpet. There they rest on a bedstead, and the women light a fire and the fire has medicine put in it in order that every woman who comes to the exorcism (*hungwa*) may be mounted by the devil (*akwelwe ni pepo*). When they have lighted the fire, a fowl is killed and the doctor is cooked for, together with his drummers. Meal finished, the women are told to get the *chano* (wicker plate) ready, and all the *wanteja* (a woman who has been *punga'd*) come and fill the house where the woman is who is to be exorcised. When a *chano* is forthcoming, they cut up sugar cane and put it in the *chano*, and a basin of rice, and a basin of honey, and a plate of bread and bananas. This over, they bring it out and put it down by the fire. Then they bring two mortars, and the *chanos* are placed over the mortars, and then the possessed woman is washed. Then she is smeared with *msilo* (a kind of oil), and brought outside and made to sit on the seat, the drummers are called and all the women, and the *mganga* beats the *bumumbu*, and those who beat the *champulo* begin and sing their song:—

“*Mwomba Muungu ni ani* viz., Who prays to God.
Fundi mganga hayupo. The great doctor is not here.
Momba Muungu ni ani.”

And they beat their drums until they think fit to stop, and if the devil has not ascended, they will cense again, i.e., the drum-beaters, and the *bumumbu* will be heated (*kukaswa*) and then they sing another song:—

“*Zaja ungo, quemi, kwe mrinshami.*”

And they answer:—

“*Zaja ungo.*”

Then they beat their drums again and the doctor sings, and if then the devil rises (*kukwea*) they leave off beating the drums, and the *mganga* questions the devil. “What have you come for?” and the devil answers, “You have summoned me,” and the *mganga* answers, “Yes, I have called you about this chair. It is ill. What are you hurting it for?” Then, if it is that spirit, he gives the reason for hurting the chair. If it is not he, he will tell them who it is, and is then told, “Go, and we will call him and ask the reason why.” The doctor then holds the head of the possessed person and says, “You devil you, go! we will call your friends.” He turns the head round and that devil goes. The *bumumbu* is then put on one side and the *mjora* is

heated and the *pepo* raised again. If say *ng'ombe* comes, he is asked the same questions, and may give as his reasons for annoying the chair, "I was made a promise; I was told that I should have a goat found for me, and be exorcised the whole night and in the early morning I should eat the goat. Well, I have not seen my promise fulfilled and that is the reason." The doctor then says, "If you wanted a goat you held your tongue about it, and you are hurting someone, and if you hurt this chair and he dies, where will you dwell then. You have no pity. You have not come to treat the chair properly, you came to injure it. However, your wife will get your goat now, but I will make a promise. The male lion (*i.e.*, the husband of the sick person) is going to the market that you may get your customary offerings, honey, sugar cane, and *sembe* (pounded Indian corn) and bread. So let the sick person sleep well, this night (*kio cha elo*), that we may know that it is you who have made her ill." If she sleeps well, it is known that it is he who made her ill, and the husband goes to the market to buy the customary offerings, and the exorcism (*pungwa*) is fixed for a certain day, and the *mganga* comes again, and the exorcism lasts all night, and the goat is tied there by the *chano* and its string is new Americano. In the morning the goat is killed and the blood put in a basin, and the devil drinks it; the animal is then skinned, and the *mganga* takes his share and is given his fee, R.2. If he sleeps in the town that night, food is cooked for him, and his drummers and his *wantega*. Then the *pepo* is given a promise. If you have any reason for anger, come and say it out, but it is not at all right to hurt the chair.

As to this the women say that they do not remember their words or their actions, but they recognise their husbands and the doctors, and if startled act quite naturally.

The *waganga* say that Shetani is one but that he changes his voice and so has many names.

‡

A List of the *Pepo*.

Joli.—This *pepo* comes after childbirth and likes bananas, sugar cane, and bread.

Mngindo.—This *pepo* comes before the milk and likes water poured over his whole body and eats chaff (*uswa*).

Jinni Bahari.—This *pepo* comes in sleep to children and their mother. He is a swell, likes a white cloth, rice and fowls.

Msuli.—This *pepo* comes when you faint on the roadside or when fowls are being killed and the smell is unpleasant to a woman. He likes a red cloth and does not eat chicken.

Kilima.—This *pepo* comes with a cutting pain in the stomach, and likes a spear, bells, and a monkey skin.

Ng'ombe.—He sucks blood and eats cups, and want shells and two *kaniki*, and does not eat beef.

Masureti.—Comes with aching after work, and is a regular swell. Must not dig, or eat *mboga*, bathes every day, and likes white clothes.

Kinyamkela.—Uses nonsensical words, likes any clothing, saccava, chaff, bananas, sugar cane, and papaws, and wears a squirrel tail for a crown.

Mankoikoi.—Comes with pains in chest or head, and likes raw eggs.

Mzungu.—He treads on fire, and likes rice and white clothing.

Kizingo.—A rare devil. He does not eat anything and speaks Ki-Bondei.

Jinni Maua.—Comes with dumbness, and likes ginger, pepper, bizzari, and msilo.

Mpasua Saanda.—Can only be detected by an appeal to the *miamuro*. He eats rice and chicken.

Mchimba Kaburi.—Can only be detected by an appeal to the *miamuro*. He eats rice and fowls.

Mankuninga.—Comes with great laughter and says he has come to greet people and has no war. He drinks water only.

Kuzingulwa Pepo.—Sometimes when a man is ill, the people go to the diviner, and are told he has a *pepo*, but even if he is *punga'd* the devil will not ascend, so you must go and find a devil doctor in order that he may be *zingulwa'd*. The doctor comes and tells them to bring two fowls, four cocoanuts and seven ash cakes, and seven pieces of sugar cane, and seven cubits of Americano. Then the sick person is made to sit on a chair and the doctor sits near him. The sick person is then covered with a white cloth, and the doctor addresses the devil as follows, for about an hour. When he has finished, the cocoanuts are broken on the threshold and one fowl is killed and left, then the cocoanuts are scooped out, and the little bits of shell placed in a *lungo*. Then they look and see on which side the fowl which was slain is lying; if the left side, the devil departs on the left, if the right, the right, and so on; if it is a wizard, on the left side. Then the fowl is plucked and the feathers put in a *lungo*; then the fowl is cooked, and then disembowelled and the belly and the feet and the head and the bits of cocoanut shell are placed together with the cakes and a cup of incense, and the cloth, and are thrown away at cross-roads, and the person who takes the cloth will take the sickness, &c., and the devil, if it comes at night, will come to the place where the offering was thrown away, and the sick person has thus thrown off the sickness.

Witchcraft.

Usawi.—The meaning of witchcraft is simply murder, the attempt to kill another person from jealousy, or from a quarrel, or if he has many children, and you have none. You bewitch him (*kuloga*) and he dies. If a man wishes to bewitch another he takes a snail shell of large size and goes by night and buries it at the man's door or at his hut in his *shamba*. Perhaps he will put a small pot or a *konko* (fruit of a kind of palm) and bury it in the road by which he goes to his *shamba*; or again, *vizulu* are put in the man's house, and the owner of the house, if he sleeps, wakes up with a start (*avwvetuka*) and that is the beginning of an illness, because the *vizulu* and the snail shells and the cooking pot suck his blood. Those who give out the bewitching medicine are the doctors.

Some wizards put powder in food, or they put *pingu* containing poison. This is put in the porridge or in the beer. Some come into your house while you are asleep and put the poison in your mouth, or they shave you and put your hair in medicine in order to "cover you up" (*akufunike*), and you will then die or go silly.

Some dig up corpses and hide them in their barns (*talai*), and throw them down by night at people's doors to bewitch. These are quite naked or if they wear clothes, wear dried banana leaves (*swago*).

Vizulu.—This is a kind of witchcraft. The man takes any sticks or the cobs of Indian corn (*mahinga*) and make *vizulu* with them. These are "charmed" and dressed up like dolls and cry like field rats. They have white cloth put on them, and if a man sees them by a roadside, he becomes a sick person, and they suck his blood. When they are being charmed, bananas and flour are put on them and covered with flour, and they become people and are able to go as far as from Mkuzi to Magila, and when they arrive at the desired spot, they suck the blood of the person and he dies. It is great witchcraft, and all Bondees are afraid of it.

Vinyua.—These are figures made of clay, and have arms and legs like a man. They are a *finjo* and are placed in the *shamba* or in the eaves or in the town to drive away witches. It is a very great *finjo* of the *waganga*, for it is they who make them. They are generally put in new villages, to drive away wizards, thieves, and leopards.

Bondei Law.

The Law of Inheritance.—When a man dies the property is divided. The wife even may be inherited, but she can refuse,

and such refusal does not entail loss of her share. (Originally, if the wife died childless, the father-in law paid back the sum received at the wedding.) A woman is generally inherited by the eldest brother. He can refuse, however.

As to the Division of Property.—The wife inherits the house and corn, and all household furniture, and the *shamba* and instruments thereof. If the man had children, the child will inherit the money and the cocoanut trees, and if there are many children, they divide equally; even in the case of polygamists the children inherit equally; the brothers do not inherit anything. In case of childhood the mother is trustee.

If the father leaves slaves, they will be divided between the houses in case of polygamists, otherwise they follow the principle of equal division. If the father leaves cattle or sheep or goats, they go to the children.

If a man dies a widower, the daughter inherits the wife's portion; if he has no daughter, his real brother inherits the wife's portion; if there is no brother, the sons divide it among their wives.

If he dies childless, the brothers divide the property equally.

It must, however, be remembered that a man *may* leave his property as he pleases. Generally, however, the general principles of justice are followed.

The deceased's disposition of property may be contested by the relations on the score of madness or *uchungu*. Generally a compromise is effected by a division of a portion of the property.

A dead man's effects are called *ufa*.

The Law of Divorce.—A man may divorce his wife for any cause, noticeably for childlessness and adultery. In case of childlessness, the dowry is restored and the woman cannot remarry until it is restored, as in the event of her marrying previously, her first husband can at any moment claim her.

A wife can leave her husband for cruelty or if he takes another wife. In both cases the dowry is refunded.

Re-marriage is always possible, and there is no shame in connection with it.

In cases of monogamy, childlessness is frequently followed by divorce; in cases of polygamy not so frequently.

In cases of incompatibility of temper, divorce is resorted to, and the dowry refunded.

If the wife is not a virgin, the marriage can be cancelled, and the dowry refunded.

It should be stated that in all cases where the dowry is refunded, only a portion of the original sum is required. This is arranged by the two sides to the suit.

But if there are children, the dowry is not refunded on divorce.

If the children are very young, the mother takes care of all. When they are grown, the father can claim them all. The date at which such claim can be made is from about ten to fourteen years old. In some cases the girls remain with their mother, but the father can claim them. If the father waives this claim, the relations of the mother may wish to pay, to avoid any trouble in the future.

In the event of a woman who is divorced for barrenness, marrying again and still remaining childless, the *whole dowry* is refunded.

A woman never has personal property, and there is no difficulty in this respect. The household furniture is divided, also the agricultural implements.

Law of Assault and Battery.—In case of personal injury without any permanent harm resulting, the law is as follows:—

The man who inflicted the injury goes in search of a doctor, who attends on him (*amtosa mazi amwenka uji*); and on recovery an agreement is arrived at, and payment made. If the injured party asserts his full rights, (*mtumtungulu*, viz., is a Shylock), the person who inflicted the injury pays a goat, and a cloth and food.

If the injury is permanent, such as an injury to the arm, the inflicter of the injury has to produce someone to draw water, two to cut firewood, a cloth to cover the sick person with, and a *kekanda* of millet or maize; also a goat (*mbuzi ya msozi*). When the injured party gets well, there is no regular payment (*ng'ombe yakwe 'kaina desturi*). Either money or cloth will be paid. If the injured party dies, the other produces a *kisiki*, to remain in the house (i.e., a slave), who wipes the noses of the mother and sisters. The guilty party has to "finish the mourning," *kubinda ndio*, which means a goat or ox. When the mourning is finished, then the case is heard, and the guilty person has to hand over a boy and a girl, and the *kisiki*, in all three persons, even his own brothers and *ndugu*, and they will be slaves. But at any time a money payment is possible as a substitute.

An injury to the eye.—(*Massa ya ziso*).—If you injure a man's eye, the customary payments are the same as those for an injury of the hand. With regard to the cutter of wood and drawer of water, if you have slaves they do the work; if not, your own mother and aunt will do it; or if they are dead, two of your sisters: if you have no sister, your cousin will do it. When the sick person gets well, there is a suit, and those who injured the other, pay a boy and a girl, and bracelets (*madanga*), and the girl will marry the injured person. The *massa*, how-

ever, never ends, for whenever the injured person is laughed at, he can ask for a further compensation, and then he is given one or two cloths (*dote*). If he is a revengeful person, he will do this to the end of his life; but if he is a generous minded man, he is contented with the previous payment.

Law of Debtor and Creditor—(*Mtigiwa na mtigia*).—If you want to borrow (*kukopa*), you go to some one who is in funds and tell him, "Friend, I am in difficulties (*kitozeka*), lend me R. 10, at 100 per cent. interest" (*shano kwa kumi*). The other says, "Fix a date for payment (*nenka kiaga*)."
A date is agreed upon. When the day of payment arrives, the creditor asks for payment, and is paid; if not, further grace is given. If even the payment is not made, the interest is increased to 200 per cent., and further grace given. If even then payment is not forthcoming, the creditor says, "Call your relations." When they come, he tells them, "This man has borrowed from me (*kani-kopa*), and after much delay is unable to pay. That is the reason I have called for you." The brothers reply, "When you borrowed and lent, we were not present and no parties to the contract. Why call us? He is your debtor, take him. Whatever you do to him, so be it (*ni ivyo*)."
The debtor is then arrested and becomes a slave, or is sold. If the creditor is a good man, he will accept the original sum as the ransom, *i.e.*, 200 per cent., not requiring any further increase.

A man can go bail for his friend and is then called (*guha*). Some insist on this, because they distrust their debtor. The pledge may be his slave, or his son, or his younger brother: if he has no younger brother, his mother or his father goes bail (*aikwa guha*). If this person is seized because the money is not forthcoming, the debtor has to redeem him, and when he has redeemed him, he has to pay his pledge compensation (*kummoga*). You give him a goat. This is also called *kunsengea nguku*.

There used to be and perhaps still exists another kind of pledge when a man borrows from a coast man. If the money is not forthcoming, the coast man seizes the first of the natives he sees of the same tribe and keeps him prisoner until the debt is paid. Then the debtor has also to pay the person arrested very heavy compensation as follows:—

BONDEL.	ENGLISH.	VALUE.
		dols.
<i>Nimoga</i>	Shave me	1
<i>Nitahisa chumvi</i>	Get sea salt out of me	1
<i>Nisengea nguku</i>	Cut me up a fowl	4
<i>Nihambula gogolo</i>	Take off my chains	2
<i>Nihaka maruta</i>	Anoint me with oil	1
<i>Nenkia kwetu</i>	Restore me to my house	1
		—
		10

This seems oppression, but it is difficult to see how otherwise a native debtor could be got at by a Mhindi, say in a country destitute of any executive.

Libel.—Kago.—Mzia.

The Law of Libel, including Trial by Ordeal.—If a man is accused of witchcraft, theft, or adultery, without any circumstantial evidence to support the accusation, there is a very interesting trial by ordeal, where, with us, the accusing party would be heavily fined. The brothers of the libeller (*mziga*) and the libelled (*mzigwa*) are summoned. The libeller is asked, "How do you know he is a (say) wizard?" He replies, "I heard him by night knocking at my house, or throwing something down, and I saw him in my *shamba* burying his shells (*nkola*)." The libelled then says, "He is talking nonsense, let him buy *kaniki* and a fowl, and I will buy a hoe and beer, and the day after to-morrow let us go to *tembo* and drink *kago*." If the libeller knows he has told a lie he will probably be afraid and confess. In that case the libelled will say, "He has given me a reputation (*kanangaza*) in the whole of this valley, so let him wipe away (*anihanguse*) my witchcraft and accompany me home." He is then given a goat and twelve dollars and the whole matter is at an end.

But if the accusing party feels confident, the *kago* comes, and the fowl; the fowl's head is cut off, and the body let go and flutters about. If the fowl falls down and sprinkles blood on either of the two parties, the relations will refuse to support him any longer. Most will be afraid to drink *kago* after this, some, however, will persevere.

If this test fails, the owner of the *kago* (*mlisa kago*) comes in with *misula* on his head, and begs; then he *afyasa*, and then he "turns head over heels" (*akia pindu*), and then he imprecates (*angita*) in the following terms:—

"You *kago* I have brought you here that you may be drunk, Very well ; (*ukasagase*) search for the wizard and kill him if you are a true *kago*." Then he scrapes (*kuhala*) his *kago*, and puts the powder in the beer (*mwe nkasi*), and both parties drink. The libeller then begins to give directions (*kusigia*) to the *kago*. "If I went to his house and threw something down by night, may the *kago* find me. If I beat the ground outside (*kudununda*), may it find me ; if I went to his *shamba* and burned my shells, may it find me. But if I am libelled only, you, O *Kago*, know it yourself." When he has finished saying this, he drinks.

And the libeller (*mnywisa*) says as follows :—

"You, *kago*, if I have libelled him, find me out ; but if I have spoken the truth and he does bewitch me, do you know it !" Then he drinks also.

Afterwards a day is fixed, and the man who appealed to *kago* (*mta kunywesa*) says, "Let him who drinks my *kago*, be given no medicine in sickness ; if he is bitten by a snake, let him not be pinched (*funywa*). If he strikes himself against a trunk of a tree or stump (*asekugewa funya*), and if when the year is over there is no one dead, there is no wizard. If the libeller dies, he is conquered, and I will come to undo the charm (*kutandula*) ; he, the deceased, cools my *kago*. If the libelled party dies, I will come to remove the charm. But a year must elapse. That is my oath." If a person dies he is not buried properly. They bury him in the *mzitu*. No one mourns. His body is removed through a hole in the back of the house (*kitutulo*), and all his property goes to the other party.

The *kago* stone is said to be discovered and recognised in rather a curious way. Where one is found, another appears. If a man sees it and throws it away in his *shamba*, the next day he will be sure to find it again. (I have seen the stone ; it looked like a limestone formation with ridges like veins, and was white where it had been scraped.)

When discovered it has to be properly set apart for its use. A goat is slain, and the blood smeared on the stone and the stone is told not to do the owner harm but live with him in peace, and get to know all wicked actions. The owner then puts the *kago* in a bag or a *kidunga*, and places it under the eaves. It never enters the house. Unless the owner of the *kago* stone kills a goat or a fowl, he dies himself.

There is another form of ordeal called "*Mzia*," the history of which is briefly as follows :—

A long time ago, there was war with the *wakilindi* (viz., a tribe), and the war reached the coast as far as Boza, and killed the people at Mhembo ! The coast people heard what a fierce

war it was, and fled from coast to coast until finally they reached the forest near Ngambo, when on looking back they found the war close to them. "Where shall we flee to now?" they cried, and they all entered and their drums, but the last to enter had a *nguo ya kishutu*, and when he entered the chasm, the earth closed again and the edge (*msa*) of his cloth remained outside. The enemy came and heard the drums beaten under the earth, and the voices of many people and the sound of trumpets and saw the edge of the cloth outside, and remarked, "Here's a strange thing. Everyone has entered here," and that was the beginning of Mzia. And now anyone who has a *mbuli* goes to this place and says, "You, Mzia, everyone entered here and you swallowed them. I, too, drink this earth from the spot where the people entered. If I have done wickedly, may I die and be buried, as these were buried; but if I have done no wrong and am oppressed only, may I recover and do you become cognizant of the man who slandered me."

The time is not fixed. Each waits for the other's death. The earth of the place is mixed with water and drunk. The power is said to come from the spirits of those who were buried on the spot. Many Bondeis go, and on their return, shave. One party to a suit can go alone, or both plaintiff and defendant can go.

Law regarding Medicine.—The doctor never goes to treat a patient unless he is called for, and if a doctor were to treat a female patient without being sent for, he would be accused of adultery. And when he is properly summoned he must ask for a fee. (*Funga mfuko and fungula mfuko.*) If he does not ask for these, they will probably accuse him of witchcraft. Again, if he treats a patient, other people must be present: if the husband is not on the spot the husband's brother should be there, or the mother or father of the sick person, or the brothers. If the doctor comes of his own accord (*akeegea*), without the knowledge of the relations, he is regarded as an *msawi*.

Law regarding Theft.—If a man steals and is seen by the owner of the property and is caught, people are summoned and informed, and the owner is told to bind him. He is then tied with his hands behind his back (*mikono nyuma*) and put in chains (*agewa gogolo*), and his relations sent for. On arrival, information as to details of theft are given, and they are told that they must redeem him. They say, "What are we to redeem him with?" If the property has not been made use of and is intact, the party who has been robbed is given his possessions and then says, "This man has given me quite a name (*kanangaza*). Everybody knows that there is money in so and so's house, well let him restore me my privacy (*na avuze mkondo*) (a small unfrequented

path in the grass where only one person has passed).” A small sum is then paid. But this in the event of the person who is robbed being a kind-hearted man. If he is a hard-hearted fellow, the thief is sold.

The Status of Slaves, &c.—A man in the Bondei country can become a slave because of: (1) war; (2) debt, his own or his relations; (3) in time of famine; (4) because of theft; (5) witchcraft; (6) a quarrel; (7) having dug a pit and not placed a fence or covering to it.

If a thief or a wizard is caught in the act, he is not often redeemed; but if their children are sold in their stead, the children can be redeemed.

A slave can be sold.

The children of slaves are slaves, and cannot be redeemed.

If a freeman marries a slave and a child is born, the father must pay five dollars before the child leaves the house the eighth day; if the payment is not forthcoming, the child is a slave.

Manumission is of very rare occurrence.

A slave cannot redeem himself, he must be redeemed by some one else.

The redemption of a capture in war is the price of two slaves.

A slave for debt can be redeemed for the sum previously agreed upon at the date of his being sold.

A slave can acquire property, and it is his own. As a rule, his master wishes the honour of possessing him.

If a slave marries, his master pays his dowry.

If a man buys a slave, he calls his own children and says, “Behold your brother.” The slave is treated as a son, and is neither beaten or tied.

Law of property.—If a man has a *shamba*, as soon as he has cultivated it, it is his property, and cannot be deprived of it. If another person comes, the first draws the boundary line (*amhakia*) and no one can ever cultivate that plot even if deserted, without the permission of the former owner. If the original owner goes away, he leaves directions with a near relation; if his brother or friend wishes to cultivate the plot, he can. But this is in the event of there being banana stalks growing (*matindi*). If there is no sign of previous cultivation, there is nothing to prevent another person taking possession.

Any man can build a town anywhere, except in very close proximity to another town or to plantations.

Any untilled land is public property, and no one can lay exclusive claim to it.

So with water, if any man digs a pit, anyone can draw water from it.

No game is preserved.

In early times a stranger could sleep in anyone's plantation and cook himself a meal with the produce. The customs now followed are said to be coast customs. But in the times of the oppression of the Wakilindi, there was a law or rule by which game was preserved, especially the elephant and *mlogo*.

Customs in reference to markets.—The market is originated as follows : The elders meet and make an agreement. A doctor is then summoned, and they go to the open space (*uazo*). When they arrive, the doctor sets up his *fungo* (*akima fungo*) at every road which opens into the market. That is called *kufunika*, and the person who breaks up a market (*kutula*) produces a fowl, i.e., *asengea mafungo*.

In the markets, goods are sold in separate places, and the women sit apart from the men.

Originally, the lord of the manor (?) *Zumbe Mwenyesesi*, could levy toll (*kusanguza*) at the market. In the early morning, his people went to the *gulio*, and stood in fours at the spot where each road leads to the market, and every person who brought anything, had to hand over one of each kind ; of sugar cane, one cane ; of a load of maize, one *kibaba* ; of rice, a *kibaba* ; and semsem and millet, just the same ; of *nyungu*, one of them ; *tambu*, *visa vinne* ; of spoons, one ; the butcher, a piece of meat. The result was then carried to the chief.

Customs with regard to eating and heshima.—A man can eat with his wife, but it is not the ordinary rule. He eats with his wife when he has no children or relations near, or if his mother is not near. A father cannot eat with his daughters. Children eat together, but when they grow up the boys eat in a separate place and the girls in another.

A man and his wife cannot sit on one *kitanda* outside the house.

A girl may not go where her father is sitting, or pass by the spot. If the father and mother are together in the house, the children cannot enter the house.

In the evening when people chat, and the father and mother sit (*he kepalo chao*) the children cannot sit with them.

If a *kitando* is brought outside and the father sits on it, the children sit on the ground.

When they eat *ugali*, and have finished, the first to wash his hands is the father. The children always carry the things into the house. If a child is sitting on a *kitanda* and his father comes up, he immediately gets up and makes room for his father (*amhakanya*).

If a child sleeps in the *bweni*, the first thing in the morning is to greet the parents.

If a father goes to the market, when he returns, his child meets him at the gate and relieves him of his load.

The mother also has her *heshima*.

If a woman has a daughter, the daughter draws water the first thing in the morning and then comes and greets her mother, and when her mother goes to the *shamba*, she remains behind to pound the maize and then goes for firewood. The mother then returns and *bunduga's* and stirs the porridge (*vuuga*) and when they go to the *shamba* in the afternoon, the daughter carries the load.

A guest is able to sit on one *lusazi* with his host, if his host is his equal. If he is his superior, the host will not sit with his guest; or if the host is superior, he will not sit with his guest.

Religion.

The gods who are especially trusted to and worshipped are Mlinga, Pepo, and Wazimu.

Mlinga.—Is a mountain in the neighbourhood of Misozwe, and it is there that a Shambala named Seketeke was buried long ago, perhaps a hundred years. The grave is said to be still there and to have a stone at the head and the feet.

If there is no rain, the people say that Mlinga is in the sulks; let us take a sheep and a spear there. They then collect (*sanga*) pice at the market. The pice are carried to the chief, and a sheep and spear are bought, and a day fixed for going to Mlinga. Then they go, having first secured a guide from Misozwe (any of the mission people! perhaps Woodward!). When they reach Seketeke's grave they weep and say, "You, Mlinga! it doesn't rain, and we are told you are angry, so we have come to give the sheep you want, and here is your spear. Now we are off home. Let it rain that our maize may recover." They then fix the spear, and descend and fix a day to meet at Msisi misi to give an account. They are asked, "Is all well at Mlinga?" And they reply, "All is well. We gave him his offerings. If it does not rain I am sure we do not know what has annoyed his highness."

Sometimes Mlinga issues a royal command, if there is anything he wants, *i.e.*,

When you dance don't beat your drums.

Don't light a lamp.

Don't plant *mtama*.

Don't drive away wild pigs, &c.

And he who issues the command is the owner of the country. He says, "Mlinga came to me by night and announced that war is coming from the Digo country; let every village dance." That is called a *geleta*, and every village carries it to the next. The dance is danced by night, and the people go to the *shambas* and break off mbaazi and maize and banana stalks, and carry

them into another town and leave them there. They knock at the doors of the houses and say, "Come out," and when they come out they say, "We have brought a *geleta*, it is come from Mlinga. Mlinga says that war is coming. Dance every night!" And so the *geleta* is carried from town to town until they reach the *nyika*. The dance is called, *Wia wa Mizungu*.

If war comes, they declare that drums are heard on Mlinga, and if the enemy are killed in war they say that they were killed by Mlinga. "Mlinga fought for us."

Moreover, they say that, if a man dies, his soul goes to Mlinga, because they hear great uproar on Mlinga in war-time, and the people say that they see no houses and therefore infer that their ancestors are fighting for them.

If there is a very strong wind and trees are blown down and grass flattened, the Bondeis say that Kinyankela has passed, who has one leg. Sometimes such storms are said to be spirits passing from Mlinga to another country.

Once they said that everyone who climbed Mlinga and spat or pierced the ground with a stick would die, or any European who made the ascent.

There is another story which illustrates public opinion as to Mlinga. There was a great pestilence at Madanga, a district near the coast inhabited by Bondeis, and many died. One night trumpets were heard and the noise of a great host. In the morning when inquiry was made, no one knew anything at all about them, and report said that the spirits of the Bondeis who had died at Madanga had passed on their way to Mlinga.

The spirits are said to enter in by a brass door.

Pepo or Devils.—Devils are called either *pepo* or *wazimu*. The *mzimu*, who according to native ideas lives on a tree, is a devil, not a departed ancestor, though as far as I can make out there is not much difference in the moral level of either. The special "devil trees" are the *mayu*, the *mfune*, the *mwari*, and the *mrumo*. A large stone or rock is also a favourite rendezvous. There are such near every village and the devil lives on them. He is discovered by a man by night in a dream. He acts in his sleep like a mad man, and runs in his madness to a certain tree and when he arrives cries, "*Hodi! Hodi!*" Even cross-roads will not put him off the track. The man is said to be awake; it is not sleep-walking. That is how an *Mzimu* begins. The sound persons follow the other, and when he arrives at the spot, the possessed (?) speaks. "How is it you do not know me in your town? When people cough and get colds and die in great numbers. I did it because you do not know me. You must look up a goat and two fowls, and one must be a white one and a hen (*nguku fyele*) and you must come and offer it. To-morrow

come and clear a space (*kusangula*) and mind you always sweep the place clean and put incense for me. In the morning the whole village is informed of the proceedings of the night. They then clear a space and take the white fowl and cook it and a *kizungu* of *ugali*. Then they take the wing of the hen, pluck off the meat and a handful of *ugali* (*tonge*) and the man who was possessed kneels and addresses the devil.

"Lord, we have repented (*kuhela*). Till to-day we did not know you, and behold it is you who make us ill. So to-day we have come and our women and our children, we have come to confess (*kusemba*). Tell us when sickness is coming, and if a child is ill, do you heal him, and everything that you want from us, we will give you."

Then they cease, eat the *ugali* and fowl, and go home.

If a man is going on a journey, he says good-bye at the Mzimu tree as follows:—

"I am going on a journey; if I go and prosper, when I return I have a pot of *ugali* for you and a fowl."

If a man is going to die, he says the same thing, and if a man has a relation who is ill and is a long time getting well, he will go to the devil tree and say:—

"The day my sick friend gets well, I have a pot of *ugali* and a fowl."

If a man has a barren wife he will go and make the following vow:—

"The day my wife is safely delivered of a child, I have two pots of *ugali* for you, and two of rice, and four fowls." (After this how is it Christian natives are bad givers of alms or offertory?)

Sometimes the tree is by the roadside. In this case the devil has made friendship with a man in a neighbouring village. He comes at night and possesses the man and the man runs to the tree. When he arrives, he announces, "I am the owner of this tree, and mind you are afraid of the cross-roads you pass to reach it; and let every one who passes mind and put a handful of fresh grass there." The cross-roads are then called the *fikio* of the *pepo*, because he says he goes there.

Kukima Mlingote. (To set up a mast.)—Often if you enter a village you will see a mast with a white flag in the centre or entrance of a town. This is generally in the event of a new town, when sickness becomes prevalent. They go to the diviner and are told: "There in your town there is a devil, which comes at night; go and look for a doctor." This doctor tells them to provide *Americano* and to cut down a long pole. The pole is then set up in the middle of the town and *mfingo* are placed at the entrance and at the back (*kitako*) of the town, and this whole process is called (*kukaga pepo*) to prevent his return. He

says that other people have entered his village, and so he backs out. Sometimes they write on the white cloth that is placed on the pole.

Before this is done, they are told to cut down a large tree in the neighbourhood as it has a *pepo*, and then sweep the town and *punga* seven days.

Mafingo.—A *finjo* is a stone and four bits of wood; and the bits of wood are set up and the stone or pot of water put between them. Every woman who goes to fetch water on returning puts a little water in the pot, at the entrance to the village. This to ward off devils (*kufinga*).

And the trees are medicines. Those commonly used are the *mkwamba*, and *mwezuzi*. The *mkwamba* is chosen because it supports the weak, as it is generally used by sick people as a walking stick and is supposed to have a medicinal value. Many *mafingo* are made with the wood of this tree.

There are two trees often placed at the entrance of a village to show where the *finjo* originally was. They are the *mzugwa* and the *mwengwe*.

Wazimu and fika ya sozi.—These are the spirits of the dead. They are said to go to Mlinga but can also wander about and cause dreams (*kulosa*). They are invisible and appear at night in the same guise as when alive. The spirit chats with the dreamer, and tells him everything he came for. If there is a sick person he tells him, "so and so is ill; to-morrow morning take cold *ugali* and common grass for *mboga*, and the skin of an old goat," and if the sick person has a dead father or mother, or grandfather, they are *vikwad* (propitiated) with the aforesaid articles. They say, spitting, "Sleep spirit, this child of yours is sick since ever so long, and does not get well, and by night ye come and give me dreams. So go and rest, that the sick person may get relief. Here is your meat. Here is your *ugali*. Here is your *mboga*." If the dead drank *beer* they are brought a *kasi* of beer, and clothed with it and told to sleep, as their beer has come. If those who are being "clothed" died in the town, they are clothed in the town, if they died in the fields, they are clothed in the fields.

Fika ya hodahoda (read first *Wazimu wa ugulo*, cf. below).—This takes place if a man loses many children or if he is often ill. He calls his friends and relations and tells them that he has been to the diviner and been told that he has "forgotten his chair" (cf. later *wazimu wa ugulo*). "So I have called you in order that I may clothe my chair. I have got two fowls, and here is some oil." The next morning they clear out an arbour (*ndala*) and about two p.m. they make all their children enter the forest and their wives, and he who has never seen *wazimu*

wa ugulo brings two *kungu* and gives them to the owner of the *wazimu*, and then he greets the *wazimu* and says, "*Ugulogulo*," and the people answer "*eh eh, fula inye zua na dilawe, msawi na akomwe*." Then the fowls (two black ones) have their legs and wings broken, and the *wazimu* are brought out of their bag, and the people sing—

"Wazimu! Wazimu! Wazimu walawa
Walawa mwe panga ya mti ulanga,"

i.e., the spirits come out of the hole in a tree up above. Then the *wazimu* are smeared all over with oil and then the people sing again—

"Hoda! Hoda! ndido ganga
Hoda mami. Eh."

And the people then take *umaka* (a plant) and it is put in a little basin with water and they are all sprinkled with it, and then the owner holds the *wazimu* and is *kutambaazwa* (*viz.*, is rubbed all over), face, hands, shoulders, and feet. Then all are treated in the same way, and the fowls are killed and cooked and eaten with *ugali*. Then the *wazimu* are restored to their bag (*i.e.*, *ukwiji*). Every *mzimu* is mentioned by name.

Wazimu wa ugulo.—When the head of a house (*mlango*) dies, he is washed and shaved by his maternal uncle, and his relations take earth and mould it. Then the hairs and finger nails and toe nails of the deceased, and his beard are put in the earth and that is an *mzimu*, and this is done with a piece of *Americano* and the slaughter of a goat. The *mzimu* is then carried to the town on the back of a person, and the people dance and the sons, etc., *waouha*, bestow presents; and everyone who wishes to see the *mzimu* must give either two *kungu*, or a string of beads. The *uzimu* is then put with his fellow *wazimu*, and are put at the head of the bed of an elder, and everyone who has a *fika* has to go to him and ask for the loan of them. There was a chair possessed in connection with these *wazimu*, hence the allusion to the chair in the *fika ya hodahoda*.

Fika ya usiagi.—If a child has the itch (*uhele*), he buys a fowl and makes a pot of *ugali* and goes to a smithy and says, "We want you to put your trade on our child." The smith then puts iron in the fire, applies the bellows, and makes an iron bracelet: when it is finished, the child is given the hammer and told to try and do some smithing. Then the fowl is brought and *vikwa'd*. "You, so and so, sleep. Yesterday you were doing smith's work, now you are dead, and when people have children, you make them ill: you want your work to be done. Wait till these children have grown, and then they will be able to follow your trade; but if you kill them who will do your old work for you? so rest, here is your fowl and

your *ugali*." The child then has a *kidanga* or iron bracelet put on him, the fowl is killed, the people eat it with the *ugali*, and the smith takes the foot (*hazi*), and places it in his smithy (*sanio*).

Fika ya mtu.—Who died from small-pox, dropsy, leprosy, dysentery.

In this case there is no goat because the man was killed by a bad disease. The man who attended to him is the only one who buries him, and when he has done so, he informs the relations and says, "Give me (*mbuzi wa mkondo*) that I may go and quiet him (*kuhoza*)." He is given a sheep and then goes to the forest to the place where he buried him, kills the sheep and throws the excrement (*ufumba*) over the grave. Then he goes home.

There is no mourning, and only a *ntezi ya ugali* is cooked. If a man who died in this way appears in a dream, he gets what he asks, cold *ugali* or *ugali* sufficient to fill a cooking pot, and an old goat, but he is *rikwa'd tanga* in the fields at cross-roads. If they were to *rika* him in the town, they would bring back the illness which killed him. That is what the people say.

The mtani.—The knowledge of the duties of this man is necessary to the comprehension of a heathen burial, and death generally. In reality the *mtani* is a jester (*mfyosi*) who brightens up a mourning (*msangaza ndio*). Everyone has his *mtani*, and if you meet your *mtani* in the road, if you have something in your hand, if the *mtani* spits on it, it is his property, and if you have lost a relation, he comes and cheers you up, and tells the people to be quiet and not to lament. "He is not dead, he is only asleep, etc.," and he has to be given something. Then at the funeral he gets all the *nyama ya mkiuso* unless he takes pity on you and shares with you. And when he loses a relation you do the same to him.

Again, if he comes to your house and your wife is stirring the *ugali* and there is a fowl who is setting, he catches it and eats it with his *ugali*, and you cannot hinder him, but you do the same by-and-bye to him. (Cf. also the account of the *mtani* at the Hunting Ukala.)

He is present at every *fika*. If the *fika* is only a small one, he says, "*pepa*"! If it is a large one, he is the overseer of everything (*mgolokezi*). Each tribe is the *mtani* of another tribe, and that tribe of it. The *mtani* also kills *vigege* and lepers and people who are not wanted. He is generally known to be expert in such matters. He can be the *mtani* of several tribes. He buries the *vigege* in the hole of the

In all *fikas* he chooses his own food before all the rest and

can eat alone or invite others. He is given the liver wing of a fowl, the head and neck of an animal.

Death and Burial.

If the Bondeis see that a man is dying they buy a burial cloth (*saanda*) and a goat and put them in another village, so as not to frighten the patient, or in another house. When he dies people do not lament until the deceased has been covered with a *saanda*, and the house has been swept clean for the mourners. Then they bring a drum and it is beaten like the war drum only with two hands, and the people lament and then others come, and the grave is dug. But the man is not buried until his brother or mother comes, and then they bury him. And at the burial, when the body is being brought out of the house, all the people in the house stand up and follow the corpse (*kimba*), and when the corpse reaches the threshold the *mbuzi ya mkiuso* is slain and the corpse carried to the grave. This goat is said to be an offering to the man who dies, that the deceased may pass over blood because he will never eat again; and that the spirit may know that he has a brother on earth who loves him. The sextons (*wazisi*) enter the grave first and receive the body, and when the body reaches the ground, the chief mourners are the first to put earth, everyone taking a little in his hands, and then the grave is filled in. The buriers then wash, and the goat is skinned, and the buriers take the fore-leg. The neck, and back and one leg are put in the house of mourning, and a leg and fore-leg are divided. Then the people separate. The next day people are sent to announce the mourning (*kusema ndio*) and every brother or relation when he comes brings a *saanda*, and if the *saandas* brought amount to ten dollars, they buy a goat or an ox; a day is fixed, corn is pounded, firewood fetched, and on the day fixed the people come together in the evening. Then if the deceased is a woman, the people accuse each other (?) (*walahama*). The husband is asked, "When you married, how much dowry did you pay?" and he announces the price (*asema ng'ombe yakwe*). If it was only a small sum, he pays more then, if a large sum, there is no further trouble. Then the *mtani* produces a hoe and a hatchet and beats the Uhumpu in the house (by striking the hoe and hatchet together). Then they go to the ash heap at the entrance to the village, and put the hoe and hatchet inside, and then return to the village and the drums are beaten. The meaning of this little ceremony is to drive the spirit away that he may not live in the house any more. The drums are beaten and the people dance until the cocks begin to crow, and then the *ngoma ya ukala* are left off and the *ngoma ya msanganyi* begins, the *msangangi* enters the

open space and dances until nine o'clock (*zua dikabula mtago wa nguku*), when the hens lay their eggs. Then the *mganga* leaves off dancing and the goats are brought and one is held by the ears; a relation on the man's side (*mamei*) holds one ear and a relation on the woman's side (*mkei*) holds the other, and they *vika*, "You, so and so, go and rest. Here is your goat! Don't come as if your *ndio* had not been finished!" The goats are then slain and skinned, and those who *vika'd* are given, one, the kidneys, (*figo*), and one the heart. The meat is cut up and cooked and the people stay there until two p.m.; then they eat and say good bye.

If a man is killed by a snake bite, he is not buried in the town as others, but in the *tang'andei*.

If a man is killed in war, the same thing happens.

If a wizard is killed, he is thrown away, and his mourning will not be finished at once. Perhaps not for ten years, in order that it may not be known that these people who are finishing a lamentation are the brothers of the wizard who was killed. If they finish the mourning at once, they will be told, "You love this murderer of a brother of yours too well. Pay us then for our brothers who were bewitched by him."

If a *kigego* is buried, he is badly buried, that the hyænas may dig him up. But generally the body is merely thrown away.

For the burial of little babies born "badly," *cf.* the Customs of Birth.

If a man is bitten by a snake and dies he will not be buried in the village but *tang'andei*. When bitten they do not bring him into the village lest he die suddenly.

When a husband dies, his wife sleeps on the ground until the mourning is over.

NOVEMBER 25TH, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and confirmed.

The presents that had been received were announced and thanks voted to the respective donors.

Dr. EUGENE DUBOIS read a paper on, and exhibited the remains of, "an animal supposed to have been intermediate between the Anthropoid Apes and Man, which he had named *Pithecanthropus erectus*."

On PITHECANTHROPUS ERECTUS : a TRANSITIONAL FORM between MAN and the APES. By DR. EUGENE DUBOIS. (Abstract).¹

MANY years ago, Dr. Dubois said Junghuhn and others had discovered fossil remains in Java. With the object of continuing the work of exploration, he (Dr. Dubois) had been employed by the Dutch Indian Government to make further investigations. During the years 1890–95 he had been successful in obtaining a large quantity of remains of mammals and reptiles, belonging mainly to extinct species, closely allied as one might expect to the later Tertiary and Pleistocene faunæ of India.

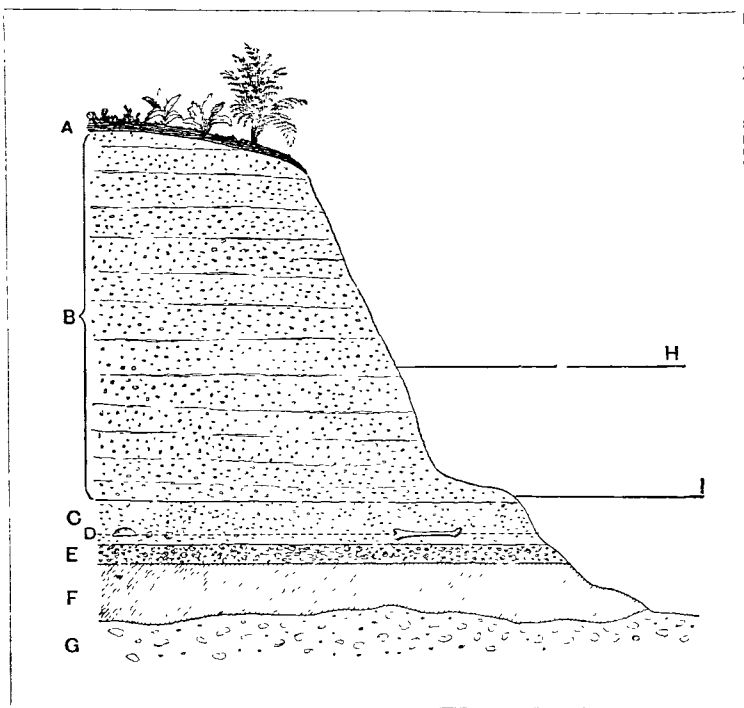
The chief localities in which these discoveries were made are in the southern slope of a low range of hills, called the Keudengs, which extends for about 60 miles between the residences Kediri, Madiun, and Surakarta on the one side, and Rembang and Samarang on the other.

The area in which these vertebrate remains are abundantly found has, in many places, a breadth averaging from one to three miles. The specimens discovered were lying in beds of cemented volcanic tuff, consisting of clay, sand, and lapilli stone. The very general occurrence of the remains of fresh-water animals in these beds and their arrangement in what English geologists call current-bedding or false-bedding prove conclusively their fluvial origin. The strata throughout the whole area have undergone considerable disturbance by folding, the result of which has been to give them a general southerly dip of 3° to 15°. The whole formation reaches a maximum thickness of more than 350 metres.

The strata rest unconformably upon beds of marine marl, sand, and limestone, which are according to Professor Martin, of Leiden, of Pliocene age.

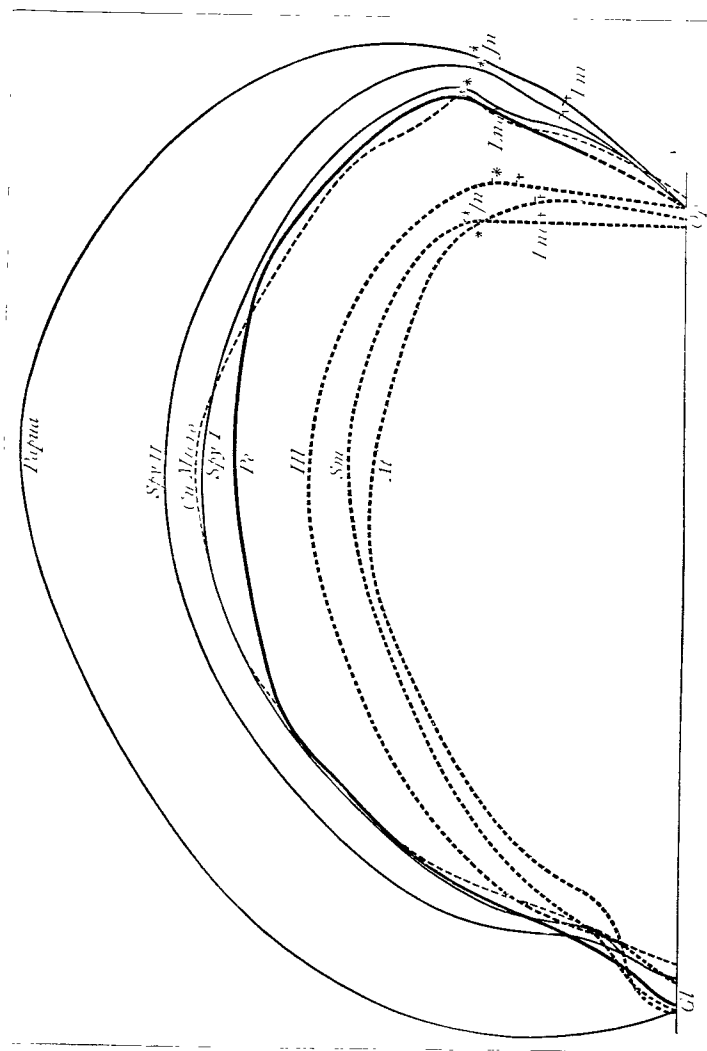
The fossil vertebrate fauna met with in these strata is the same throughout the Keudeng and other localities in Java. Its age can only be decided after the description of Dr. Dubois' collection has been published, but there are already sufficient grounds for saying that the stratigraphical position of the fauna and its relation to the Post-Tertiary and Pleistocene vertebrate faunæ of India points to the conclusion that it is most probably younger Pliocene. In no case, however, can it be later than the oldest Pleistocene, for the species found belong

¹ This abstract appears by permission of the Royal Dublin Society, before which body the paper was read on the 20th of November, 1895; the paper is published in full in the *Transactions of the Royal Dublin Society*, vol. vi, part I, page 1. (February, 1896.) The illustrations, which are also kindly lent by the Royal Dublin Society, are unavoidably deferred till the next number.

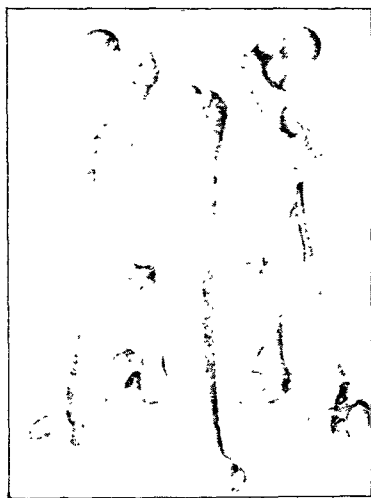
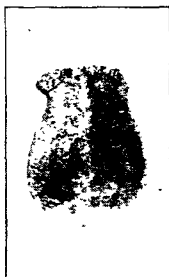


SECTION OF THE BONE STRATA AT TRINIL.

- A—Vegetable soil.
- B—Sand-rock.
- C—Bed of lapilli-rock.
- D—Level in which the four remains were found
- E—Conglomerate.
- F—Clay-rock.
- G—Marine breccia.
- H—Rainy season level of river
- I—Dry season level of river.



Profile outlines of the skulls of *Pithecanthropus erectus* (Po), a Papua man, the Spy man No. 1, the microcephal Joe described by Professor Cunningham, and of *H. globules leuciscus* (Ill), *Semnopithecus macrus* (Sm), and *Anthropopithecus troglodytes* (At). Gl—Glabella. Op—Opisthion. Ju—Juvénis.



FEMUR, TWO MOLAR TEETH, AND CALVARIA OF
Pithecanthropus erectus.

exclusively to living genera, except the extinct *sub-genera* Stegodon and Hexaprotodon, and must therefore be younger than the principal part of the Upper Miocene or Lower Pliocene Siwalik fauna, which includes a good many extinct genera; further the number of the extinct species seems to be somewhat greater than that of the Narbadá fauna, which belongs to the early Pleistocene.

In the neighbourhood of Trinil (in the regency of Ngawi, of the Residency Madiun) Dr. Dubois discovered a spot at the foot of the Keudeng very rich in fossil remains. Here in August, 1891, and during the following year he unearthed a large quantity of fossil bones, amongst which he discovered the calvaria, thigh bone and teeth of a great man-like mammal, which he considered an intermediate form between man and the apes, and named accordingly *Pathecanthropus erectus*. So much impressed was Dr. Dubois with the importance of his find, that he determined at once to publish a provisional description of the remains.

This monograph, which was necessarily incomplete, owing to the author's isolation from various sources of comparison and reference, has given rise to much discussion amongst anatomists and zoologists in Europe and America, and it was with the view of providing further information that Dr. Dubois had returned to Europe, bringing with him the specimens in question.

The lecturer then proceeded to furnish a more detailed account of the locality from which the remains were obtained.

In the neighbourhood of Trinil the Bengawan or Solo river runs as far as Ngawi, a distance of $7\frac{1}{2}$ miles, between steep banks, composed almost exclusively of the above-mentioned volcanic sand and lapilli, cemented together and hardened into soft rock, similar to those in the Siwalik hills. In this area the strata have a general dip S. of about 5° , and are only concealed by a thin covering of vegetable mould; through these, in the immediate vicinity of Trinil, the river has cut its channel to a depth of 12 to 15 metres.

At points above and below Trinil, the Pliocene marl and limestone appear under these strata.

The first fossil bones here discovered were cut out of the rock by means of hammer and chisel, and consisted of the horn of a species of small deer, which is among the commonest of the fauna, a molar tooth of Stegodon, and a few other bones, all belonging to the same homogeneous fauna met with in other parts of the Keudeng Hills.

In making the excavations care was taken that the layers were removed one by one. They consisted from above down-

wards of alternately coloured sandrock which became coarser owing to a greater admixture of lapilli especially in the deepest layer, which measured about one metre in thickness, and which merged below with a conglomerate layer. Under this there is a sharply defined layer of hardened blackish clay. In the sandrock the bones were found in increasing numbers from above downwards, so that the lapilli layer contained the most; in the conglomerate layer but few were met with; whilst in the clay none were discovered.

It was in the lapilli layer on the left bank of the river, amidst hundreds of other skeletal remains, that the third molar tooth was found. This was in September, 1891; here also, a month later, on exactly the same level in that layer the cranium was discovered at a point one metre distant from the spot where the tooth was picked up. The mammalian remains found in the same layer are for the most part those of extinct species, for it is almost certain that some of them are now living in Java.

These comprised the bones of a species of *Cervus* which still survives in the Malayan Isles. Many remains of *Stegodon*, besides some of a species of *Bubalus* apparently identical with the Siwalik species. At the same time a *Bos elephas* differing from the known species, living or fossil, was discovered. In addition the genera rhinoceros, sus, felis, hyæna, and others were represented, whilst a gavial and crocodile were found which differ somewhat from the existing species in India, were unearthed.

The setting in of the rainy season prevented the continuance of the excavations until next May, when work was resumed, with the result that in August, 1892, the left femur was discovered in precisely the same layer at a distance of 15 metres from the spot where the skull-cap and molar tooth were found in the previous year.

In the October following a second molar tooth was discovered. This lay 3 metres from the place where the skull-cap was picked up, in a direction towards the spot where the femur was found. This tooth was not described in Dr. Dubois' first monograph, as it was only subsequently met with among a number of teeth taken from the same place.

Of the remains of animals found in the same strata in other places, the most interesting are a gigantic pangolin (*Mauis*), three times as large as the existing Javanese species, a hippopotamus belonging to an extinct Siwalik sub-genus, a tapir, an elephas, and the extinct sub-genus *leptobos*.

These details as to the geological conditions under which the four bones were discovered were advanced to prove that they

not only came from the same bed, most probably late Pliocene, but that they were all found at precisely the same level in it, hence most probably they must be of equal age. The fact that their contours are sharp is opposed to the view that they have been washed out of an older (later ?) bed. Dr. Dubois therefore thought that there was little reason to doubt their origin from the rocky strata.

All the bones were in the same state of fossilization, harder than marble, very heavy, and of a chocolate-brown colour. The femur was twice the weight of a recent human femur of the same dimensions. The erosion on the surface of the skull-cap was not the result of disease as some critics had suggested, but was due to the corroding influence of the water, which had similarly affected all the bones found in this locality.

In discussing the question as to whether the bones belonged to the same individual or no, Dr. Dubois stated that in his opinion the distances apart at which they were found was no argument against their common origin. In his experience he had frequently found portions of the same skeleton as widely separated and, in some instances, fragments of the same bone were met with as far apart. Nor had he ever found anything like a complete skeleton which seemed to prove that the bones must have been widely scattered. Dr. Dubois advanced the theory that in all probability the remains were those of animals which had perished in volcanic catastrophies, their corpses being washed down in the course of a large Pliocene river. Most probably the bones, before they were deposited and buried in the old alluvia, were separated from one another by the rotting of the flesh or it may be together with the flesh were torn apart by crocodiles. In support of the latter view Dr. Dubois noted the fact that many remains of crocodiles were found as well as the marks of their teeth in the spongy parts of many fossil bones.

Considering the few examples there are of the fossil remains of anthropoid apes, and the absence of human remains from strata older than the middle Pleistocene, the lecturer urged that it was almost impossible to conceive that the thigh bone now discovered, which most certainly belonged to the Tertiary Period, could be human, whilst the skull found alongside of it should be regarded as that of a great anthropoid ape, a supposition which would necessarily involve their separate origin; much more reasonable to him appeared the view that they belonged to one and the same intermediate form.

Dr. DUBOIS, in referring to his critics, divided them into two groups, the first, which included Professors Sir W. Turner, Cunningham, A. Keith, Lydekker, Paul Matschie,

Rudolf Martin, and A. Pettit, held that the thigh bone and calvaria were human. The second group consisted of those who thought that the skull was simian and the femur human, and who further denied that there was any organic connection between them.

Only Professor Manouvrier of Paris, and Professor Marsh in America admitted the *possibility* of the remains belonging to a transition form between man and the apes.

In discussing the bones in detail, Dr. Dubois said most were agreed that the femur was human and not simian in character. Virchow alone was singular in maintaining the view that it belonged to the ape, most probably a *Hylobates*, and advanced in support of his opinion the fact that the bone had a straight candle-like shaft such as never occurs in man.

The lecturer however declined to agree with this conclusion, as he pointed out that the shaft of the bone was distinctly curved, though not to the same extent as is ordinarily met with in human femora. Further there could be little doubt that the fossil bone belonged to a form having an erect posture, and in this respect the condyles are quite human in their characters, contrasting markedly with those of *Hylobates*, which are distinctly simian.

Mr. Dubois, however drew attention to three minor points of difference between the fossil bone and the typical human femur, and stated that after having examined a very large number of human femora of different races, he had been led to consider these three characters as marks of differentiation from the human femur. The points of difference referred to by the lecturer, were—

1. The more rounded form of the shaft on its inner side.
2. A less extensive popliteal area which, moreover, is convex in its middle, thus imparting a rounded, instead of a flattened, form to the shaft in this situation.
3. A less raised and more simian-like trochanteric line.

Mr. Dubois laid particular stress on the small development of the popliteal space, the like of which he had never seen in a human femur, and pointed out that Dr. Hepburn had shown that in *Hylobates* the *vastus internus* muscle and the *femoral head* of the *biceps flexor cruris* came into close proximity to each other on the lower part of the posterior surface of the femur *below* the level of the insertion of the adductor magnus muscle. They are only separated from each other by a strong inter-muscular septum, which extends to within an inch of the inner joint. By this means the superior part of the popliteal surface of the femur is rendered *convex*, and presents a median longi-

tudinal elevation. An extension of these muscular attachments would exactly produce the appearances found in *Pithecanthropus erectus*.

Dr. Manouvrier too admitted that he had never seen a similar form of popliteal surface, though he had examined many thousands of specimens. Dr. Dubois, therefore, held that though the femur might be human, yet considering the circumstances under which it was found associated with an ape-like skull and simian teeth, he was justified in assuming that it was not human but belonged to an intermediate form. A form possibly like that of a gigantic gibbon, for it was only necessary to double the linear dimensions of the thigh bone and skull of an existing *Hylobates* to have dimensions exactly corresponding to the Java form.

In referring to the exostosis which is connected with the fossil bone behind the shaft just below the small trochanter, the lecturer stated that most were agreed that this pathological growth could have effected little if any change in the normal general form of the bone.

In regard to the skull-cap there was much greater divergence of opinion. Cunningham, Turner, A. Keith, R. Martin, and Topinard regarded it as human. Lydekker thinks it that of a microcephalic idiot, whilst Krause, Waldeyer, Virchow, Hamy, Manouvrier, Flower, and Marsh denied the possibility of it being human, and regarded it as more probably that of an ape. The calvaria measures 185 m.m. in length and 130 m.m. in breadth; its cranial capacity has been estimated at 1,000 c.c.

This is in marked contrast with the highest cranial capacities of the anthropoid apes, which never exceed 600 c.c., and more usually measure about 500 c.c. On the other hand many instances are met with among Australian Veddahs and Andamanese of a cranial capacity as low as 1,000 c.c.

As the cranial capacity is doubtless correlated with the size of the body, Dr. Dubois pointed out that assuming the femur to belong to the skull, the height of the individual estimated from it according to human proportions would be 165 to 170 c.m. Contrasting this with the height of Veddah women, which averages about 143 c.m., we are justified in declining to admit the possibility of a skull with such a small capacity being human. The other alternative is that the skull is that of a microcephalic idiot; all things considered this is most improbable. It is far more likely, therefore, assuming the skull and femur to belong to the same individual that we have *not* to deal with a human cranium.

The Trinil skull in form and size very closely resembles the type of the anthropoid apes. The smallness of the arch of the

vertex, the low receding forehead, the *torus occipitalis*, and the especially strong projection of the orbital parts of the frontal bone, are all simian characters. Further, the superior occipital ridge seems to unite with the posterior part of the temporal ridge, and forms a well marked swelling, common as a rule in the skulls of full grown apes, but never seen in human crania, not excepting those of microcephalic idiots.

Whilst admitting the close resemblance between the Trinil skull of the Neanderthal and Spy crania, Dr. Dubois drew attention to the difference in size and capacity between his specimen and those mentioned. The Neanderthal skull has an estimated capacity of 1230 c.c., whilst its length and breadth exceeds the Trinil skull by about 15 m.m., the same holds good with regard to the Spy crania. The most important points of difference between the Spy skulls and Dr. Dubois' specimen were the more marked flattening of the parietal region and the relatively greater dimensions of the orbital parts of the Java skull. The Trinil skull differed in similar respects from the microcephalic skull described by Professor Cunningham.

As Virchow has pointed out the orbital part of the Trinil skull is quite different from that of man, and on comparing the fossil calvaria with crania of the anthropoid apes, the proportion between the lengths of its orbital and cerebral parts is found to be exactly the same as in the skulls of gibbons. In *Hylobates* alone is the arch of the cranium as high as in *Pithecanthropus*. A further point of importance in the Trinil skull is the pronounced forward slope of the infra-inial part of the occiput; in this respect it differs little from the human form, and is much more marked than in the anthropoid apes, as the following figures show.

In the anthropoids the angle formed by the median line of the nuchal plane and the median line from the glabella to the hinder border of the foramen magnum varied from 83° to 86° , in *Semnopithecus maurus* it was 90° , in *Macacus cynomolgus* 106° . In man the angle is about 50° , in the No. 2 Spy skull 56° , in the microcephalic skull described by Cunningham it is 68° , whilst in *Pithecanthropus* it equals 65° .

In discussing the question of the teeth, one of which had been discovered since the publication of his memoir, Dr. Dubois stated there was much difference of opinion regarding their origin,—Krause, Ten Kate, and Turner considered them simian, whilst R. Martin, Lydekker, Cunningham and Manouvrier inclined to the view that they were human. Both the teeth are modelled after exactly the same type, so that there is little ground for disputing the connection between them, the crenation of the crowns is the same, and the dimensions are not dissimilar.

The more recently discovered tooth was much more worn on the crown than the third molar previously found, but Dr. Dubois pointed out that it was not uncommon to find the second molars more worn than the third molars, so that this circumstance did not disprove the assumption that the two teeth belonged to the same individual.

Dr. Dubois considered that the teeth were not human, first on account of their great size and the divergent nature and length of their fangs, and secondly, because the *buccal* posterior cusp is in a state of retrogression, exactly as is seen in the case of the molars of anthropoid apes.

Summing up his arguments the lecturer said that on geological and anatomical grounds we were justified in assuming that we had in these four specimens evidence of a form intermediate between man and the anthropoid apes, and further, that it is exceedingly probable that the several bones all belonged to one and the same individual.

The concluding words of the lecture may be given *in extenso*:—

“I attempted to give here a diagrammatic representation of my views with reference to the phylogenetic evolution of man and the apes.

“In the Eocene, when the Old World and American mammal fauna were more nearly related, we have a hypothetical genus, *Archipithecus*, from which diversified a branch giving rise to the platyrrhine apes, the families *Cebidæ* and *Hapalidæ*. In the early Miocene or, perhaps, in the Upper Eocene, from a common hypothetical *Paleocercopithecus*, the ancestor of the Old World apes, there branched off all the lower Old World apes, the *Cercopithecidæ*. Afterwards in the Miocene, when the main stem had become more anthropoid, there branched off the Upper Miocene or Lower Pliocene from *Dryopithecus*, which in its characters is intermediate between the lower catarrhine apes and the man-like apes. Still later in the Miocene originated the hypothetical form *Prothylobates*, a very generalised form, which I regard as the ancestor of all the anthropoid apes and man. During the Middle and Upper Miocene, there originated from this stem-form, first a branch giving rise to *Pliopithecus*, and the form from which we have the femur of Eppelsheim (*‘Dryopithecus’* sec. Pohlig), which I call *Pliothylobates*; further, the existing genus *Hylobates*; secondly, branches giving rise to *Simia*, and to *Troglodytes* and gorilla.

“Lastly, we have in the main stem, originating from *Prothylobates*, during the Lower Pliocene (or Upper Miocene) the *Tiwalik Paleopithecus*, which after a careful examination of the specimen in the Indian museum at Calcutta, on which the

genus is founded, I regard as a decidedly Hylobatoid form, but approaching towards man. Between this form and man comes in the Upper Pliocene, *Pithecanthropus*, which, while still retaining many Hylobatoid characters, approaches, as I have tried to show, nearest of all to man, but cannot be placed in the genus *Homo*."

The following discussion took place on exhibition of the remains of *Pithecanthropus erectus* to a meeting of the Institute.

Sir WILLIAM FLOWER congratulated Dr. Dubois upon the results of his successful explorations in Java, resulting in the discovery of a large and interesting Mammalian fauna, and said that all present must feel particularly indebted to him for giving them an opportunity of inspecting the specimens he had exhibited that evening, and for the full and lucid explanation he had given of them. It was unfortunate that the fragmentary condition of the remains of *Pithecanthropus* was such as to leave much of its real nature open to conjecture. A comparison of the cranium with that of the Neanderthal man, showed a decidedly lower form, especially in the narrower frontal region. On the whole it presented, except in size, a remarkable resemblance to that of *Hylobates*.

Sir JOHN LUBBOCK also congratulated Dr. Dubois on his interesting discovery. He asked for some further details as to the position of the bones with reference to the remains of the Pliocene Mammalia, for in Dr. Dubois's original memoir this was not explained in detail. He also inquired whether the great amount of abnormal growth on the femur would not have considerably interfered with the movement of the animal. If so that would point to its being human. A man might well have been engaged in some sedentary occupation, or perhaps supported by his family. A monkey, however, was more dependent on retaining its activity unimpaired.

Mr. BLAND SUTTON was of opinion that the three specimens—calvaria, teeth, and femur—should be separately discussed. It was pure assumption to believe that they belonged to the same individuals. In regard to the teeth and calvaria he would not offer an opinion. The femur was undoubtedly human, and exhibited the muscular markings characteristic of a typical thigh bone of a thoroughly adult man. The irregular bony mass connected with the shaft was such as is met with in that very rare disease known as *myositis ossificans*, which is characterised by extensive ossification of the tendons and tissues of muscles at their attachments. Thus it was curious that two sets of human remains, the Neanderthal and the Javan, which had

given rise to much discussion, belonged to diseased skeletons; the Neanderthal fragments exhibited clear and undoubted evidence of rickets.

Mr. Sutton was of opinion that the attempt to form a new genus for these remains was at least premature, and the generalisation as to the probable phylogeny of anthropoids and man based upon it, was one calculated to bring ridicule upon Anthropological Science.

Mr. E. T. NEWTON called attention to the fact that the bones of *Pithecanthropus* being, apparently, in a similarly mineralized condition to those of the extinct animals found in the same stratum, was strong evidence of their being of the same age. It was a noteworthy fact that so many observers were agreed as to the great similarity to *Hylobates* presented by the calvaria and femur of *Pithecanthropus*, and from the occurrence of the latter in beds where several of the forms were gigantic representations of living genera, nothing was more likely than that *Pithecanthropus* was a gigantic *Hylobates*. And still further, it was in *Hylobates*, rather than in the larger anthropoid apes, that many anatomists traced the greatest resemblance to Man.

Sir WILLIAM TURNER said: The opportunity which Dr. Dubois has given us of seeing his very interesting specimens and the fuller description of the conditions under which they were found, have enabled us to realise their characters and antiquity much more clearly than was possible from a perusal of his memoir published last year. The association of these specimens with bones and teeth of mammals, many of which are now extinct, and their correspondence with them in mineralization, shows them to be of undoubted antiquity, and if their human character is accepted, makes them rank as the most ancient human remains which have yet been discovered. As regards the thigh bone, the opportunity of carefully examining it, both last week in Edinburgh, and now at this meeting, does not lead me to alter the opinion which I expressed in my published criticism of the original memoir, that there is nothing in its form and appearance which would lead one to say that it possessed characters specifically or generically distinct from those of a human thigh bone, and in this respect my conclusion is in harmony with the opinions of many anatomists who have seen it. The bone is in various parts undoubtedly modified from disease; for in addition to the remarkable branched and pointed exostosis, there is evidence of a pathological growth of bone for some distance down the linea aspera, and of new bone growth around the posterior border of the articular area of the condyles.

Clearly therefore increased periosteal bone formation had been taking place for some time before death, and it is not unlikely that the convexity of the popliteal surface of the bone, to which Dr. Dubois attaches so much importance as differentiating it from the human femur, may have been produced by increased periosteal activity in that region. Further it may be stated that there seems to be no prolongation of articular area on the back of the femur immediately above the inner condyle, such as Havelock Charles has associated with the squatting posture.

As regards the skull cap, now that one has seen it, there is more difficulty in coming to a conclusion. If, however, the thigh bone and calvaria belong to the same skeleton, and Dr. Dubois, from his personal examination of the locality, has no doubt on this point, the establishment of the human character of the femur would require us to regard the calvaria as also human. Without question they were found in the same geological horizon and belong to the same epoch. The calvaria is less distinctively human than the Neanderthal skull cap which everyone now admits to be human. In the latter there is a forehead with rounded frontal eminences, but in the Java specimen the frontal bone is flattened and slopes abruptly backwards in a manner such as approximates it much more to the shape in the ape than to a human skull, even as low as the Neanderthal; though I should state that in the Edinburgh University Museum is the cast of a microcephalic woman with a frontal flattening very like that of the Java calvaria. In the parietal region the Neanderthal and Java specimens have a great resemblance to each other, and both differ from the corresponding region in the ape by their considerable breadth and less rounded sides. In the occipital region, as Dr. Dubois testifies, the form is more human than ape-like. The internal capacity of 1,000 cub. cent. is more like that of man than of the ape. No existing species of ape has a greater internal capacity than from 500 to 600 c.c., whilst I and other anatomists have measured many human crania with a capacity of less than 1,100 c.c. and some even with less than 1,000. As the capacity indicates the mass of the brain and its possibilities to exercise function both as a sensori-motor centre and as the seat of intelligence, it will rest with those who regard this calvaria as belonging to a *Hylobates*, much larger than any existing species, to give a satisfactory explanation of the presence of so large a brain in an animal, which, if the thigh bone belonged to the skull, had not the bulk of body of a large gorilla; in which animal the brain cavity does not reach 600 c.c. The thigh bone certainly cannot be regarded as that of *Hylobates*. In

conclusion, may I express the thanks of anthropologists in this country to Dr. Dubois for his courtesy in bringing the specimens for our inspection, and the further hope that the government of the Netherlands may continue the search for additional remains in the same locality.

Dr. GARSON said that he had studied Dr. Dubois' memoir on *Pithecanthropus erectus* very carefully and also the various criticisms of it which had been published. He was therefore extremely glad to see the specimens themselves, as they showed many morphological details of which the plates and diagrams gave but an imperfect idea; the paper also which Dr. Dubois had read that evening threw further light on the specimens. In the first instance he had been very uncertain as to the geological epoch to which they should be referred, but from the additional information Dr. Dubois had just given regarding the mammalian fauna found in the same formation with them, he was satisfied as to their being Pliocene. As regards the specimens themselves, although there was no absolute proof that they all belonged to the same skeleton, he did not think there was any positive proof to the contrary. Some authorities had urged, from a study of the plates, that the femur was less worn than the calvaria, but examination of the specimens themselves does not support this view. Again it had been said that the last molar tooth was little worn and therefore probably came from a younger cranium than that found. He had seen several instances, however, where the last molar was almost unworn while the other teeth of the series were considerable worn and the skull was thoroughly adult with the sutures obliterated, precisely as was shown by the calvaria and the other molar tooth recently added to the specimens now under consideration. The local conditions under which the specimens were found must have considerable weight in determining the question as to whether or not the several fragments belonged to the same individual; of these Dr. Dubois was in the most favourable position to judge.

The femur is extremely human-like, and if taken alone would undoubtedly be said to be that of *Homo*. The last molar tooth, also, might perhaps be ascribed to the same genus, as in a skull of an Australian native in the Royal College of Surgeons Museum he had found a last upper molar tooth measuring 16 mm. transversely and 11.4 mm. in the antero-posterior direction, which is even slightly larger than in the Javan specimen. The calvaria, on the other hand, is very different, and much more gibbon-like than one would imagine from the drawings of it. The large bony formation on the femur is very

similar in size and character to what occurs in the femur of a skeleton of a man in the Pathological Collection of the College of Surgeons, except that in the latter specimen it is situated lower down on the shaft of the bone, and the ossification extends from the femur to the ischium; there are also several other ossifications of the muscular attachments and aponeuroses. The modification of the surfaces for the attachments of the muscles of the back of the thigh near the popliteal region of the femur from Java are interesting, but even if the bone be taken by itself, he was not certain as to their significance. The fact that a pathological condition of great rarity to the extent to which it obtains, is present in the femur, is apt to make one think it possible that an aberrant condition may also be present in the calvaria, and that it might have belonged to a microcephalic *Homo sapiens*. The probability of chances is, however, very much against such a combination of abnormalities occurring in the same individual. The characters of the calvaria also did not, to his mind, support such a conclusion. By these the specimen, if taken alone, might be ascribed to a large extinct *Hylobates*, although it should be remembered that in these large extinct forms the brain is proportionately smaller than in the recent, whereas in this specimen the capacity of the calvaria indicates as far as he could judge a proportionally larger brain. This then brings us to the hypothesis of Dr. Dubois, that the position which should be assigned to it is somewhere on a phylogenetic line between *Hylobates* and *Homo*. The characters of the femur and also of the molar tooth, particularly as regards its fangs, being in some respects different from those of *Homo sapiens*, and considering the strong opinion Dr. Dubois has formed from examination of the strata and the other mammalian remains therein contained, it is most reasonable to conclude that the specimens are probably parts of the skeleton of one animal, and that it belonged to one of those extinct species of primates more or less related to *Homo sapiens*, which there are strong *à priori* grounds to believe existed in Pliocene times. He was of opinion that the specimens could not be ascribed to either the genus *Homo* or species *sapiens*, and must be classed as another and distinct genus and species, but he did not think it necessary to create a new family of Primates for the specimens as their characters were sufficiently close to those of *Homo* to be included in the family *Hominidæ*.

Mr. KEITH saw no reason for dissenting from Dr. Dubois' conclusion that these fossil remains belonged to a late Tertiary period. He thought Dr. Dubois was also right in regarding the remains as of one species, but it was open to question if of one

individual. The third molar was slightly worn, the second considerably so; such a condition indicated an animal in an early stage of maturity. But the sutures of the calvaria were ossified; such a condition occurred only in the later stages of human life, very seldom in the earlier. It was true that ossification of the sutures began in the early stages of maturity of the apes' skull, but ossification was directly due to the great development of the temporal and occipital long ridges—a development absent in this calvaria. The sutures would therefore follow the course of ossification usually taken in the human skull, so that the teeth and calvaria evidently belonged to different individuals.

The chief question that had to be settled was, whether the skull was human or not. What was the criterion of a human skull? What was the criterion of an ape's skull? How were they to be distinguished? To his mind there were only two differences between the skulls of men and apes, and they were differences, not in kind, but in degree. The first difference was in the large excess of cranial capacity of the human skull; in the extent of its cranial capacity the skull before them merited to be called human. The second difference between the skulls of apes and men lay in the large development of muscular ridges and processes for the fixation of the masticatory apparatus; the development was extensive in apes; it was slight in men. In the extent of this development, also, the calvaria in question was distinctly human.

Dr. Dubois had placed *Pithecanthropus* directly in the stem of the human race, and regarded it as representing the human race during the late Tertiary period. *Pithecanthropus* was, in short, Pliocene man. He thoroughly agreed with Dr. Dubois as to the genealogical position of *Pithecanthropus*, but entirely differed from him as to his method of nomenclature. In fact, the question arose, where in the ancestry of the human race was one to draw a line to mark where pithecoïd forms cease and man commence. Dr. Dubois had drawn that line between the Tertiary and Quaternary periods; but it seemed to him, that in the nomenclature of a race, the same principle should be followed as in the nomenclature of a human individual. The same name serves in infancy as in old age. Hence he thought it better to call Dr. Dubois' *Pithecanthropus erectus*—Pliocene Man.

Professor THOMSON said what struck him most was the very different complexion put upon the case, now that they had an opportunity of examining the actual specimens. This only went to prove how difficult it was to form any correct opinion

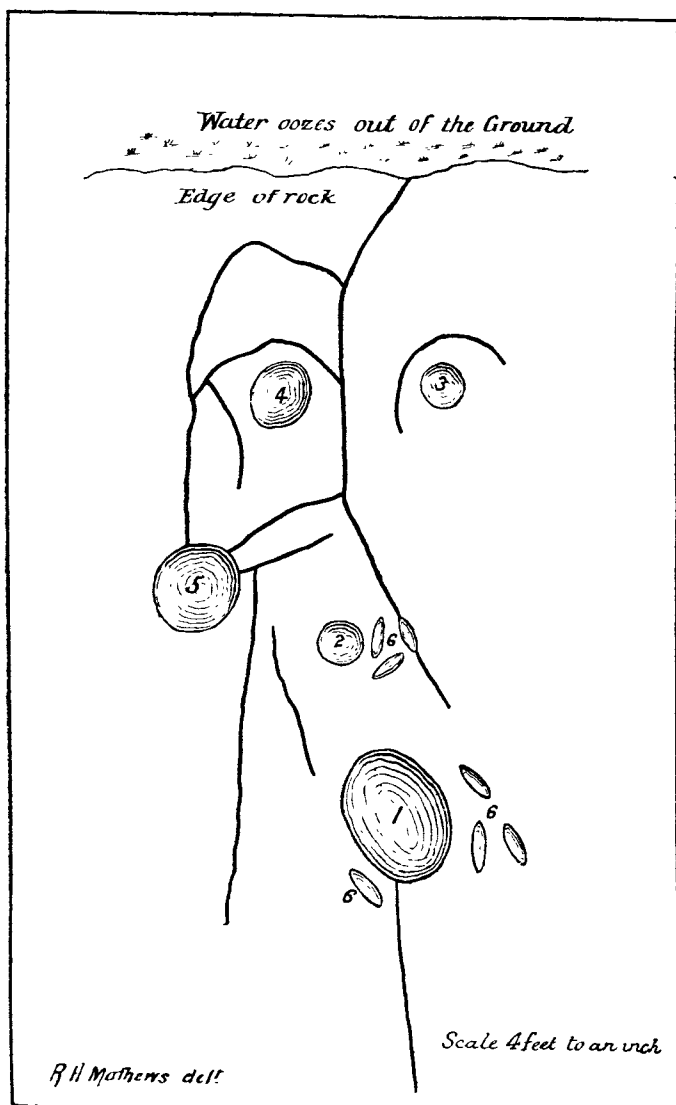
on such a matter by the mere perusal of a monograph, however good. For his part all he felt justified in saying was that the calvaria was undoubtedly ape-like in all its characters, except in regard to its capacity: on the other hand the femur displayed all the features of a well-developed human thigh bone.

He could not agree with Dr. Dubois in the arguments he advanced regarding the causation of this peculiar modelling of the popliteal surface, for it seemed to the speaker that the same arguments would apply equally well against Dr. Dubois' conclusions; for, according to his own showing, there was little difference between the popliteal surface in man and the chimpanzee, though in the latter the adductor magnus muscle was extensively attached to that surface.

Regarding the teeth Professor Thomson was not inclined to admit the impossibility of their being human, for an examination of Australian Crania had led him to conclude that the size of the teeth was not sufficient to preclude the possibility that they were human molars.

As to whether or no the calvaria and thigh bone belonged to the same individual was a matter of vital importance. Unfortunately the evidence advanced was not conclusive, and the only course left open at present was to reserve one's judgment. This, however, did not detract from the remarkable value of the discovery of this skull, which he regarded as by far the most important contribution to our knowledge of an intermediate form between man and the known apes.

Prof. G. D. THANE said the difficulty of forming an opinion upon the remains before the meeting is rendered very great by the circumstance that the indications afforded by the femur and by the calvaria are directly opposed to one another. The femur in its conformation is human, and of a high type. It is a question whether the peculiar features of the lower part of this bone referred to by Dr. Dubois may not be related to the pathological processes by which it has been affected. The individual to whom this femur belonged undoubtedly stood on the lower limbs only with the knee-joint fully extended, as indicated by the designation "*erectus*" given by Dr. Dubois, possessed a great toe, and not an opposable hallux, and was therefore zoologically "man." The teeth are human in their characters, but peculiar in their large size and their spreading fangs. The calvaria, however, apart from its size, appears to resemble more nearly that of one of the higher apes than the corresponding part of a European skull, and approaches more closely to the former than the Neanderthal specimen. Probably its most pronounced simian feature is the form of the occiput.



STONE COOKING-HOLES AND GROOVES FOR STONE-GRINDING.

Assuming provisionally that the remains are from the same individual, judgment must be reserved in view of the isolated character of the find, since there is always the possibility of the calvaria belonging to an exceptional, or microcephalic individual of a well developed human variety. But, just as the racial character of the Neanderthal skull was established by the discoveries at Spy, so it may be hoped that in the future other specimens will be forthcoming which will establish the value of these as bringing before us a distant stage in the phylogeny of Man.

STONE COOKING-HOLES *and* GROOVES *for* STONE-GRINDING *used*
by the AUSTRALIAN ABORIGINES. By R. H. MATHEWS,
Licensed Surveyor.

[WITH PLATE XVII.]

WHILST I was engaged in searching for and describing aboriginal rock paintings and carvings in the county of Cumberland, New South Wales, I came upon some holes in a large rock, which had apparently been used by the aborigines as ovens for cooking their food. As I have never seen ovens of a similar character described in any scientific work, I have thought that a few remarks upon them would be of interest to the members of your Institute, and would also perhaps have the effect of inducing others to give us the benefit of their observations in different parts of Australia. There must be a number of gentlemen living in the interior of the colonies, where the natives are still numerous, who could furnish valuable information in regard to their modes of cooking, and the implements used. This is a subject on which anthropologists always endeavour to obtain information, and we find it set down among the "Hints to Travellers" issued by various learned Societies.

The supposed ovens referred to consist of holes in the surface of a large tabular rock of Hawkesbury sandstone, about 200 feet in length and 50 feet wide, with a slight slope towards the north-east. These holes have the appearance of having been formed by the weathering away of soft patches of the rock, and the largest of them are about 15 inches deep. It is likely that they have been artificially deepened by the natives to render them suitable for use as ovens. In Nos. 1 and 4, Plate I, I found a number of loose pieces of sandstone, of irregular shapes, averaging 3 or 4 inches each way, which had evidently been burnt in the fire. Indications of fire were also discernible on the walls of the holes, which induced me to think that they

had been used by the natives, in some way, for cooking purposes.

A very small stream of water, oozing out of the earth on the highest side, where the ground is on a level with the surface of the rock, trickles over the latter; and to prevent this from running into the holes, grooves have been cut in the surface of the rock about an inch deep, and an inch and a half wide, for the purpose of conducting the water along them (see Plate I). The cutting of these grooves in the hard rock with the rude tools used by the natives would be a work of considerable labour. The marks of these tools are evident in all the grooves. It will be seen that while the water is carried round Nos. 1 to 4, several of the grooves conduct the stream directly into No. 5, which fills with water and overflows. In order to prevent this overflow from running into No. 1, a groove is cut in the position shown in the plate, which carries the water down the sloping surface of the rock.

In looking at the position of the grooves (see Plate I), one is forced to the conclusion that it was the intention of the natives to keep the water out of holes Nos. 1 to 4, and that this must have been done for some purpose. Having now described and illustrated the holes and grooves, as they appear upon the rock, I will make a quotation from Mr. R. B. Smyth's "*Aborigines of Victoria*," vol. i, p. xxxvii, which may help us in arriving at a conclusion as to the uses to which this work was applied:—"Mr. Taylor states, on the authority of Mr. T. Baines,¹ that in North Australia the natives immerse heated stones in water poured into holes in the ground, and boil fish, tortoises, and the smaller alligators."

As the aborigines of the district in which this rock is found are all gone, and none of the white people know anything about these relics, I have been unable to get any account of how they were used. In the absence of any direct information, I would venture a conjecture that perhaps a fire was lighted in, say, one or more of the holes, Nos. 1 to 4, and when it had burnt down, the embers were raked out, and the hole filled with water, by baling it out of No. 5, which would soon become hot. Small animals or pieces of flesh could then be put into it, and by adding the fragments of stone before referred to, previously heated in a large fire burning close by for the purpose, the water in the hole could be kept constantly hot until the animals were sufficiently cooked or parboiled. Instead of heating the hole itself by fire, all the heat could be applied by means of the

¹ Mr. T. Baines was the artist in A. C. Gregory's exploring expedition in Northern Australia in 1856.—"*Journ. Aust. Explorations*," p. 120.

hot pieces of stone; and in either case, the stones would be replaced at intervals as required.

If these hollows were used by the aborigines for boiling their food, in the way suggested, it is a point of very great interest in regard to the customs of the natives, because it has been said by some that they were unacquainted with the use of boiling water for cooking purposes. I shall be very glad if some of the readers of this paper can give us some information on this part of the subject.

Among the aborigines a common way of cooking the flesh of animals was to make a circular excavation in the ground, varying in diameter and depth according to the size of the animal to be cooked in it. In the bottom, and within the sides of this hole, stones were laid as a kind of paving or lining, on which a large fire was kindled. More stones, and the earth taken out of the hole in excavating it, were placed on this fire for the purpose of being heated. When the fire was burnt down, the embers and hot stones were raked out. Damp grass was then placed upon the stones in the bottom of the excavation, and the game, with the skin upon it, was placed on the wet grass, more wet grass being strewn over the game. The stones which had been heated were next placed on the layer of grass, and the hot earth piled on top of all as a covering. When grass was not obtainable, leaves were used instead. The heat of the stones, and the confined steam, together cooked the meat. If the steam arising from the flesh was not thought sufficient to cook it, holes were made in the earth of the top covering, into which water was poured to increase the steam. By this way of cooking the carcase retains all its juices, and when taken out of the oven the skin peels easily off. In places where stones were scarce, clay was used as a plaster on the bottom and sides of the hole. For a small animal a mere hole in the ground was made. Small game was often roasted on the hot embers of the fire on the surface of the ground. In some parts of Australia, the natives plaster small animals and birds with a thick coating of mud, and place them in the ashes of a large fire, keeping them covered with ashes and hot embers until they are cooked. When they take it out, the skin, or feathers, as the case may be, come away with the hard muddy crust, leaving the animal clean and juicy.

I have thought it desirable to mention some of the different modes of cooking in order to show that the natives largely used holes or excavations for this purpose. It may be that in the stone ovens I have described, the animals were not boiled, as suggested, but were placed in the hole in the rock, previously heated by means of a fire, and were then dealt with as just

described when cooking in an excavation in the ground. The evidence of fire around the walls of these holes, and the fragments of rock, also bearing traces of fire, found in some of them, leave little, if any, doubt that these places were used for cooking in one or other of the ways indicated.

That the vicinity must have been used as a camping place by the aborigines is shown by the large number of figures carved upon the same rock as that on which these ovens appear. Extending south-easterly from the latter, about 200 feet by 50 feet of the surface of the rock is carved with several figures of men, women, animals of different kinds, and other objects, to the number of about 35 altogether. Some of these carvings appeared to be much older than others, showing that the work was done at different times during a considerable period. This would lead us to the conclusion that this rock was frequented by the aborigines from time to time, and that they amused themselves during their leisure by adding to these rock pictures on each successive visit. On these occasions it is reasonable to suppose that they would camp near the place, and that the ovens I have been describing were then used in cooking some of their food. There is a constantly running stream about 300 or 400 yards from this rock, with level ground between the two places, well suited for camping purposes. Were it not for this permanent supply of water being so near at hand, it might have been suggested that perhaps these holes were used for collecting reservoirs of water for camp use, whilst the natives were employed in carving the numerous figures upon the rock above referred to. In any case it is likely that they were occasionally used for that purpose, on account of their proximity to the work.

This rock was also utilized for another very interesting purpose, namely, grinding and sharpening the stone axes and tomahawks used by the aborigines in their daily pursuits. These grinding places are found in many parts of Australia, and consist of elongated oval hollows worn into the surface of the rock by repeated rubbing. The stone axe is held in both hands and rubbed, as a carpenter sharpens a chisel or other tool, to and fro on a fine grained sandstone rock, the latter being kept constantly wet by pouring water upon it, at intervals as required, out of a native vessel. Hence such places are always found near water.

On looking at Plate XVII, Figs. 6, 6, 6, show altogether seven places where stone axes have been sharpened. The group of three places adjacent to Fig. 2, is directly supplied with water by means of the groove shown on the plate, which runs through one of them. The water discharged from this groove flows

by Mr. Grant was found in another camp about four miles from Boar Pocket, at Lake Eicham, also in the Cairns District, after the "dispersal" of the local tribe by the armed constabulary.

The tectotums are made of a small gourd, growing in the neighbourhood, and vary slightly in size, the largest being 3 inches in length, and about the same in diameter. A wooden spindle is passed exactly through the centre protruding at the upper end to form a shaft, and sufficiently at the lower to form a peg. The spindles are secured to the gourds, top and bottom, by black gum-cement in three instances, and by a yellow gum in the fourth. In the three examples obtained by Mr. Day, two holes are burnt on opposite sides and through the gourd, side by side, by means of a fire-stick, and the holes for the insertion of the spindles are similarly produced. In the Lake Eicham top, on the contrary, the holes are above one another, the upper on each side being the larger.

Mr. Day says that the black gum-cement is prepared by the "gins," or women, chewing the kino of a eucalypt for a day, when it is sufficiently soft and ready for use. The tops are spun between the palms of the hands, the rotatory motion thus brought about giving sufficient impetus to produce a loud hum. The blacks with whom Mr. Day was associated spun on a piece of government blanket, or on an old coat, but they informed him that previous to the advent of the white, a small mat was employed, made by steeping the bark of a eucalypt in water, and then pounding it into fibre with stones, previous to weaving.

At Lake Eicham, Mr. Grant informs me, the tops are simply spun on any piece of hard ground, a track preferred, and are often used to amuse the children.

Confirmatory evidence has been obligingly supplied by Sub-Inspector P. Galbraith, of Cairns, through the Commissioner of Police, Brisbane. The inspector says, "Top spinning is a pastime amongst the aborigines of [Mount] Bellenden-Ker, and the Musgrave River. It is indulged in by adults as well as the children. The top is made out of an indigenous gourd averaging about 3 inches in diameter, a small stick being placed in two holes through the centre, and held there by clay and honey wax." This information is exceedingly satisfactory, and quite confirms the statements of Messrs. Day and Grant.

As I have already explained the tops are met with, so far as at present known to me, only within a limited geographical area. The Barron River, Lake Eicham, Mount Bellenden-Ker, and the Musgrave River, are all in the Cairns District, and comparatively speaking not far apart. Whence, therefore, did

the aborigines obtain the idea of teetotum spinning? So far as one can learn certainly not from the whites, at any rate there is no evidence to support such a conclusion. On the contrary, we have the testimony of Mr. Day, a most reliable observer, that they were used before the occupation of this part of the country. I regret that I am not in a position to solve this question, but there is the bare possibility that they may be a remnant of Malay or Papuan influence. It is a significant fact that the further we go north on the Australian Continent, the more apparent is the resemblance between the weapons and implements of the North Australian aborigines to those of New Guinea. Through the researches of Mr. C. H. Read, stone spinning tops are known to have been used on Murray Island in Torres Strait, in the form of circular lenticular discs, with a central hole through which is passed a stick of palm wood. They are used simply as toys, and are spun with the hands.¹ Mr. Read does not think the natives of the island invented the idea, but obtained it from some of the Asiatic Archipelago people to the west and north. The nearest known locality to Murray Island at which top-spinning occurs is Timor Laut, one of the Tenimber Islands. The toy used here, however, appears to be a true top. In the Straits Settlements, on the other hand, Mr. Read says a humming-top is used, made from a section of a bamboo.

At the exhibition of similar tops to the present before the Field Naturalists' Club of Victoria, already referred to, Mr. Lucas is reported to have said that they were the "first instance of a toy amongst the aboriginals." I think this remark attributed to Mr. Lucas is too casual. Games, other than strictly athletic exercises, accompanied by toy-adjuncts, are certainly known amongst the Australian aborigines. Mr. A. W. Howitt says² "that the game of ball was probably known to most of the tribes of South-east Australia." The *Kurnai* made the ball used by them from the scrotum of an "old-man" kangaroo; the *Woiworung* of rolled-up pieces of opossum skin, calling it *mangürt*. The late Mr. R. B. Smyth³ informs us that this game of ball was called *marn-grook* in some tribes, and the ball made of twisted opossum hair. The ball made from the kangaroo scrotum, by inflating it with air, was called *dirrk*.⁴ Toy weapons were also made for and used by the male children.⁵ But the most interesting toy is the *weet-weet*, or "kangaroo rat," a plaything of the natives of Victoria probably for ages.⁶ It

¹ "Journ. Anthropol. Inst. Great Britain and Ireland," 1887, xvii, p. 85.

² "Journ. Anthropol. Inst.," xviii, p. 316 (footnote).

³ "Aborigines of Victoria," 1878, i, p. 176.

⁴ *Ibid.*, 179.

⁵ *Ibid.*, 49.

⁶ *Ibid.*, 353.

consists of a knob and handle, and the game depends on the skill with which it is thrown to a distance. An interesting description¹ of this game has also been given by Mr. W. E. Stanbridge, and is important, inasmuch as it differs in some particulars from the account given by Smyth.

I hope on a future occasion to forward to the Institute the native name of these tops, and the systematic name of the gourd of which they are made.

Explanation of Photograph.

Three tops from the Barron River, obtained by Mr. W. S. Day.

NEGRITOE in BORNEO. By H. LING ROTH.

THE question, "Are there any Negritoes in Borneo?" is one of great interest, and has been as yet by no means solved.

The interest in the question lies in the fact that while in the surrounding countries the existence of Negritoes has been more or less proved, no European has yet met with a Negrito in Borneo. There are plenty of Negritoes in the Philippine Islands (A. B. Meyer, "Die Philippinen," II, Negritos; Dresden, fol., 1893), and while Alex. Dalrymple says there are none in Palawan, Mr. A. Hart Everett says he could hear nothing of any Negritoes in that part of Palawan visited by him. They exist in the Malay Peninsula. In Sumatra the Kubus had been considered to have at some remote period intermingled with the Negritoes, while their osteology leans decidedly to the Malays. (Dr. Garson, J.A.I., xiv, 132.) In Java and Madura I cannot find that Negritoes are proved to have existed, although the Kalangs are very like them. In Sumbawa there is a race of people of whom almost nothing is known (F. H. H. Guillemard, "Australasia," II, 1894, p. 358), but it is not stated they might be Negritoes. "It is highly probable that a low and primitive race² did once inhabit Celebes, but if so, it has, so far as we know, completely disappeared" (*ibid.*, p. 288).

It was for this reason—namely, widespread surrounding negritic population—that, when at the meeting of the British Association at Oxford in 1894, I pointed out we must suspend our judgment as to the existence of Negritoes in Borneo, I was told probabilities were against me, as Borneo was in the midst

¹ "Trans. Ethnol. Soc., 1861," p. 297.

² Not necessarily negritic—nor is this inferred by Dr. Guillemard.—H. L. R.

of a negritic centre. Since then, I find that Dr. A. B. Meyer¹ had come to the same conclusion as I did, arguing from a somewhat different standpoint to that which I took up. He has gone so thoroughly into the matter, that I translate his statement.

"Although for a long time past all authors were of the opinion that the reports of the existence of Negritoes in Borneo were not to be trusted, their existence has lately been repeatedly asserted. Pickering ('U.S. Explor. Exp.,' 1848, ix, 174) notices especially their absence, and Waitz—Gerland ('Anthr.,' 1865, v 47) express themselves as follows: 'Older reports have mentioned Papuans which were said to have been found in the interior of Borneo, but W. Earl² remarks very correctly ("East Seas," 1836, 256) that no traveller has himself seen them, Kessel³ also only heard Malay traders speak of them ("Z. f. a. Erdk. N. F.,' iii, 379) and Marsden ("Misc.,' 37) only mentions that a small Borneo chief spoke of woolly-haired Tammans in the interior; on the other hand, Schwaner ("Borneo," 1853, i, 64) assures us particularly that with the exception of the Papuans⁴ introduced into the north-east of the country, there are no others. Later on Earl ("Races Ind. Arch." 1853, 146) found the existence of Papuans in the interior of Borneo somewhat more probable but still without sufficient foundation in fact.' Earl's account in question is held to be credible by others, but it is practically a matter of individual opinion whether one believes it or not. It mentions that a ship's captain stranded in 1844 on the north coast of Borneo, at the Berau or Kuran rivers, once met, fifty miles inland, at the foot of Mount Tabur, 17 curly headed small men ornamented with cicatrices, at least so the man himself told him (Earl), and his evidence must be considered satisfactory. Everything else which Earl brings forward is calculated to weaken rather than to strengthen the case. The district in question has certainly not often been travelled over, but now that north Borneo has been traversed several times, and even Mount

¹ A. B. Meyer, "Die Philippinen," ii, Negritos. Dresden, fol., 1893, pp. 71-2.

² Earl only says that no Dyak whom he met had seen them, notwithstanding that the natives assert their existence; but as they also assert the existence of tailed people, they must not be believed.—A. B. M.

³ Kessel says that in the interior, "namely, in the north-east," they cultivate the soil. This statement is perfectly incredible.—A. B. M.

⁴ These are Papuans from New Guinea, whom the Sulus have brought home as slaves from their widespread piratical expeditions, or whom they have purchased elsewhere, as, for instance, in the Moluccas. Schwaner says, "the few Papuans which were met in the north-east of Borneo come from the fatherland of the Papuans, and have been carried off by the Sulu pirates." He adds also, "that the local traditions there speak against the existence of Negritoes."—A. B. M.

Kinibalu has been several times ascended, and no traces of Negritoes¹ have anywhere been found, one must very strongly doubt the credibility of the statement of a ship's captain. Junghuhn ("Battaländer," 1847, i, 220, note) considers it unimaginable that anyone could have overlooked such a specialised race with woolly hair and black skin in Borneo. Everett, who possesses a profound knowledge of north-west Borneo, leaves the reader in the dark as to whether he believes the statement of the captain or not, nevertheless he seems to be more on the side of the doubters ("Nature," 1880, xxi, 588). Giglioli ("Viaggio Magenta," 1875, 253) believes the statement, and adds: "Beccari found no trace of Negritoes in Borneo, "cioè vide indegeni coi capelli crespi." Unfortunately Giglioli says nothing more, and in the year 1876 when he published his "Studi sulla razza negrita" ("Arch., p. Antr.," vi, 315), he said nothing new on the above remark of Beccari; it is therefore only a matter of casual observation upon which no value can be placed. I think this all the more, because when Zannetti ("Arch. p. Antr.," 1872, ii, 159), discussing a Dyak skull of Beccari's collection, speaks against the existence of Negritoes in Borneo, he makes no mention of any contrary opinion of Beccari's. Finally, Hamy ("Bull. Soc. d'Anthr.," 1876, 116) refers to the above mentioned captain's statement, and describes a skull which Jourdan had received at the Lyons Museum as a Negrito skull from Borneo; he says (p. 118) that this skull fully proves the existence of Negritoes in the heart of Borneo. In 1882 Quatrefages and Hamy ("Cr. Ethn.," 195, figs. 212, 213) published an illustration of this skull as such; it is ornamented with incised lines such as we know the trophy skulls collected by the Dyaks of Borneo possess. I do not consider that in this case the conclusion drawn from certain anatomical characters on the race are justified. When, moreover, the Bishop of Labuan² informs us ("Tr. Ethn. Soc." N.S., 1863, ii, 25) that the traditions of the Dyaks of north-west Borneo indicate that a black race had preceded them, one must

¹ See for example Whitehead ("Expl. Kina Balu," 1893); compare Latham ("Essays," 1860, 192). Treacher ("J. Str. Br. R. As. Soc.," 1890. No. 1, p. 101), says, "There are no Negritoes in Borneo." Hose ("Journ. Anthropol. Inst.," 1893, xxiii, p. 156) considers the Punans, "the nomadic tribes found at the head waters of all the big rivers in central Borneo," as the real aborigines (p. 157): "I have no doubt in my mind that this wandering race of people are the aboriginals of the country." The Punans are real Malays.—A. B. M.

² The Bishop's (Dr. McDougall's) words are: "With respect to the races of people, the present occupants were, he thought, the remains of a second wave of immigration. The black race or Papuas, he thought, came in first, and the second wave of Malay or Dyak race followed; the traditions of the country refer to such an event, and the people speak of a black race having been there before them. The present race were probably from India." ("Trans. Ethnol. Soc.," ii, 1863, p. 26).—H. L. R.

not jump to the conclusion that they refer to Negritoes ; besides, according to Waitz—Gerland (*"Anthr.,"* 1865, v, i, 47), the traditions read quite otherwise. On what Flower quite recently supports his short statement (*"J.A.I.,"* 1889, xviii, 82), that Negritoes exist in the interior of Borneo I do not know for certain, but I presume it is on the map in Quatrefages' *"Hist. Gen. des Races Hum."* (1889, to p. 343), or to the latter's references in *"Les Pygmées"* (1887-42), but which, as we saw above, do not stand investigation. How carelessly Quatrefages went about this question I may show by a single example. He says (*l.c.*, p. 76), *"A Bornéo, les Dayaks chassent au Négrito comme à la bête fauve,"* and refers to Earl (*"Papuan,"* 1853, 147); but Earl only reproduces an account of Dalton's on certain tribes of North Borneo, of whom Earl says that they may perhaps be related to the above named more than questionable Negritoes of the ship's captain, in spite of the fact that Dalton himself calls them wild Dyaks. As Dalton lived eleven months on the Koti river, no one has the right to re-christen his Dyaks Negritoes. That which Earl adds to Dalton's account makes it to appear as quite settled that these people possibly could have been Negritoes. Compare also Meinicke's excellent remarks on the absence of Negritoes in Borneo (*"Beitr. Eth. As.,"* 1837, p. 8). After all this I conclude that there is no proof yet of the existence of Negritoes in Borneo ; all the same, we can only then judge with the fullest confidence when the whole interior shall have been fully explored."

The following is Mr. Earl's statement in full :—

"The interior of this large island is occupied by tribes of the brown race, whose warlike habits, and skill in the use of missiles, will account for the disappearance of a less civilised race from the southern and western parts of the island. In the year 1834, when on a visit to the western coast of the island, I was informed by some of the more intelligent among the natives, that a wild, woolly-haired people existed in the interior ; but the information was mixed up with so many incredible details respecting their habits, that I was led to consider the whole as fabulous ; and the subject is treated in this light in the narrative of my voyages, which was published soon after my return to England in the following year.¹

¹ The various tribes are said to differ considerably from each other, an assertion I do not pretend to dispute, although my own experience would go to prove the contrary, since I saw individuals belonging to several distinct tribes, who, with the exception of a difference of dialect, might be recognised as the same people, those who lived entirely on the water being much darker than the rest. It is said by the Dyaks themselves, that some parts of the interior are inhabited by a woolly-haired people ; but as they also assert that men with tails like monkeys, and living in trees, are also discoverable, the accuracy of their accounts may be doubted. I met with no Dyak who had seen either, but as a

"During a second visit to the Archipelago, my attention was chiefly directed to the more eastern islands, where the field was comparatively new, and I had no opportunity of obtaining farther information respecting the interior of Borneo until when again on my return to England in 1845. One of my fellow passengers on that occasion was Captain Brownrigg, whose ship, the 'Premier,' of Belfast, had been wrecked on the east coast of Borneo during the previous year, when the European portion of the crew found refuge with the Rajah Mudah of Gunung Thabor, a place about 50 miles up the Buru or Kuran River, whence they were removed after a residence of several months by a Dutch vessel of war, which had been sent from Macassar for the purpose. Captain Brownrigg was so kind as to entertain me frequently with accounts of the people among whom he had been thrown, and who had not previously been visited by Europeans. They appeared to me to differ in no essential particular from the other coast tribes of Borneo, except in being rather more advanced, as was evident, indeed, from the hospitable reception he met with among them; but my attention having been aroused by a repeated mention of 'darkies' as forming part of the population, I was induced to make some inquiries, when I found that he alluded to an inland tribe that only occasionally visited Gunung Thabor, and who were a short, but stoutly built, people, perfectly black, and with hair so short and curly that the head appeared to be covered with little knobs. This perfectly agrees with the general appearance of the hair of the Papuans, who keep the head shorn; and I have not the slightest doubt that they were unmixed Papuans. He also described the skins of the breast and shoulders as displaying many raised scarifications, apparently similar to those of some New Guinea tribes, but which do not appear to be common among the mountain Papuans. On one occasion, a party of seventeen men, chiefly young and middle aged, visited the settlement for the express purpose of seeing the Europeans. They appeared to live on very friendly terms with the people of Gunung Thabor, from whom they obtained supplies of axes and chopping knives, giving the produce of the forests in exchange.

"It should be mentioned that this was Captain Brownrigg's first visit to the Archipelago, and he could scarcely have been aware that any peculiar interest was connected with this information, so that his evidence must be considered satisfactory. I

woolly-haired people is to be found scattered over the interior of the Malay Peninsula, their existence in Borneo seems by no means improbable."—"The Eastern Seas," p. 255.—H. L. R.

have since searched the published accounts of visitors to the east coast of Borneo, but the only allusion I can find to a people who may be allied to the same race, is contained in the papers of Mr. Dalton, who resided for eleven months on the Coti River, to the south of the Buru, during the years 1827–28. Mr. Dalton's papers were originally published in the 'Singapore Chronicle' of 1831: and the following extract is from Mr. Moor's 'Notices of the Indian Archipelago,' in which they are reprinted:—

“Farther towards the north of Borneo are to be found men living absolutely in a state of nature, who neither cultivate the ground nor live in huts; who neither eat rice nor salt, and who do not associate with each other, but rove about some woods like wild beasts. The sexes meet in the jungle, or the man carries away a woman from some kampong. When the children are old enough to shift for themselves they usually separate, neither one afterwards thinking of the other; at night they sleep under some large tree, the branches of which hang low. On these they fasten the children in a kind of swing; around the tree they make a fire to keep off the wild beasts and snakes; they cover themselves with a piece of bark, and in this also they wrap their children; it is soft and warm, but will not keep out the rain. These poor creatures are looked on and treated by the Dyaks as wild beasts; hunting parties of twenty-five and thirty go out and amuse themselves with shooting at the children in the trees with sumpits, the same as monkeys, from which they are not easily distinguished. The men taken in these excursions are invariably killed, the women commonly spared if young. It is somewhat remarkable that the children of these wild Dyaks cannot be sufficiently tamed to be entrusted with their liberty. Selgie (the Dyak chief of Coti) told me he never recollected an instance when they did not escape to the jungle the very first opportunity, notwithstanding, many of them had been kindly treated for years.”¹

“It must be remembered that this account, as well as the extract from Valentyn respecting the wild tribes of Ceram, is derived from the information of natives, who avowedly made parties for the express purpose of hunting them, and who are therefore in making them appear as much as possible in the light of wild beasts. Neither of these accounts alludes to the wild tribes as being woolly-headed, but this is a point on which no native is likely to give information, unless the question is expressly put to them. When on the coast of Borneo in 1843, we had a Papuan sailor on board the vessel, who formed one of

¹ Dalton's "Notices," p. 49.—G. W. E. The term "Dyaks" should probably read "Kayans."—H. L. R.

my boat's crew, and the peculiarity of his appearance was almost invariably a topic of conversation wherever we went, and if any of the natives we came in contact with had ever seen or heard of a people possessing similar peculiarities, the circumstance was nearly certain to be noticed.

"It is probable that information connected with the existence of this race in Borneo, which is of considerable ethnographical interest, may be found in Holland, among the documents containing the reports of government officers who have been despatched from time to time to make researches on the east coast of the island, as Dr. Roorda Van Eysinga, Professor of Oriental Languages and Geography to the Royal Military Academy of Holland, states, in his "Geography of Netherlands' India," that "In the inaccessible parts of the island" (Borneo) "Papuan's yet reside in a savage state, bordering upon that of wild beasts."¹ No authorities are quoted in the work, but as it is used as a class-book throughout the Netherlands, it cannot be supposed that the statement has been loosely made." (Earl's "Papuan's," pp. 144-149.)

The reference by MM. Quatrefages and Hamy ("Crania Ethnica," pp. 194-196) to a comparison between the Negrito skull and that of the Andamense, induced me to turn to Mr. E. H. Man's work "On the Aboriginal Inhabitants of the Andaman Islands" (Lond., 1884), where on p. 119 there is a footnote reference to the kidnapping of the Andamanese by Malays, etc. It runs as follows:—

"Captain J. H. Miller, in a communication to the 'Nautical Magazine,' 1842, says: 'The islands in the west side of the Andamans are frequented during the fine season, from December to April, by a mixed and mongrel race of Malays, Chinese, and Burmese fishermen for *bêche de mer* and edible birds' nests, who are of very doubtful honesty, and it is necessary to take a few muskets and cutlasses, just to show them that you are prepared for mischief in case of need. These fellows are also 'fishers of men,' and to their evil deeds much of the hostility of the islanders may be attributed; they carry off children, for whom they find a ready market as slaves in the neighbouring countries. I have been told that formerly they were friendly, and assisted these fishermen, until a large party was invited on board a junk or prow (the Chinese got the blame of it), and after being intoxicated, were carried off and

¹ "Ten zuiden van het koninkrijk Borneo wonen de wilden volkstammen, Deeseems, K-a-jans en Maroets genaamd. In het outoegankelijk gedeelte van het eiland wonen nog Papoeas in eenen staat van wildheid, dewelke aan dien der wilde dieren grenst." "Aardrijksbeschrijving van Nederlandsch Indie," p. 76.—G. W. E.

sold at Acheen: and the practice is still carried on by these fellows, who land and carry them off whenever they can catch them. The Andamanians have retaliated fearfully whenever any foreigner has fallen into their power, and who can blame them?" ("Sailing Directions for the Principal Ports in the Bay of Bengal," by W. H. Rosser and J. F. Imray). On asking Mr. Man for further information, he kindly sent me the following extract: "Extract from an article entitled, 'One of the earliest accounts of two captive Andamanese,' edited from a paper by the late John Anderson, Esq., Secretary to Government Penang Civil Service, by his son, Captain T. C. Anderson, B.S. Corps, and published in a magazine called 'Indian Society,' May, 1867: A Chinese junk, manned partly by Chinese and partly by Burmans, proceeded to the Andaman Islands, to collect *bêche de mer*, sea slugs (a great treat in China), and somewhat resembling a black snail, which the Chinese dry and eat, as well as edible birds' nests, which abound there. The crew of the junk, which was lying about two miles from the shore, observed eight or ten of the savages approaching the vessel, and wading through the water. Upon coming within a short distance of the vessel, they discharged several showers of arrows, which severely wounded four of the Chinese. . . . The Burmans gave immediate pursuit in their boat, and after much difficulty captured two of the savages. These were brought to Penang by the Chinese. . . . One of the savages was 4 feet 6 inches, and the other 4 feet 7 inches in height, and each weighed about 76 lbs. They had large paunches, and though they were so small, were in good condition. . . ."

"My father, in a work entitled 'Considerations relative to the Malayan Peninsula,' says in a paper on a tribe called 'Semangs,' 'There is little doubt that the degenerate inhabitants of the Andaman Islands in the Bay of Bengal are descended from the same parent stock as the Semangs. . . . Again, he says of a Semang whom he saw, "This man was at the time of his visit to Penang, when I saw him, about 30 years of age, 4 feet 9 inches in height. His hair was woolly and tufted, his colour a glossy jet black, his lips were thick, his nose flat, and belly very protuberant, resembling exactly two natives of the Andaman Islands who were brought to Prince of Wales' Islands (*i.e.*, Penang) in the year 1819.'"

At the same time he wrote me: "I feel sure, however, that the skulls found in Borneo, which differ so widely from those of Dyaks, can have nothing to do with the Andamanese, none of whom, so far as we know, were ever taken beyond Penang and Perak." But how can we tell to what distance these kidnapped islanders were taken? We have seen Chinese and Bur-

mese pirates visited the Andamans. When the pirates were destroyed (190 killed or drowned and 31 taken to Sarawak), releasing 390 captives (140 by death only), "among the captives there were people from every part of the Eastern Archipelago, from Borneo, Celebes, Java, the smaller islands, and the Malayan Peninsula" (Helms, 212). The wide range of the pirates, who brought their captives to the Sulu slave mart, is referred to by Dr. Guillemard (*op. cit.* p. 92). If Andamanese were carried to the Malay Peninsula, there is every probability of their having been carried further east, and hence possibly to Borneo. On asking M. Ernest Chantre, Director of the Muséum des Sciences Naturelles at Lyon, where the skull is deposited, for further information regarding its origin, he wrote me under date of 24th January, 1894: "All that I can tell you over and above what is mentioned in the 'Crania Ethnica' is, that it was obtained more than thirty years ago, as coming from Borneo, but we do not know under what circumstances it was got. In fact, I do not possess a single document about it. I may, however, add that side by side with this engraved skull we possess another one equally small, not engraved, but blackened by smoke. It was purchased about ten years ago from a natural history merchant of the city of Amsterdam, as coming from Borneo." Further requests for measurements of this second skull failed to elicit any reply. The illustration of this engraved skull shows very characteristic Borneo tracery, and omitting the fact that we are not sure from what district of Borneo these engraved skulls are obtained, and also leaving apart the absence of mention by any one who has seen these engraved skulls hung up by the people who engraved them, we must conclude that this skull must have passed through the hands of Borneo people. But this by no means proves that the skull originally came from Borneo. So much for the artificial evidence. If the skull is so identical with that of Andamanese, as I understand MM. Quatrefages and Hamy appear to think—but which, as seen above, Dr. A. B. Meyer doubts—then it may have been introduced. If, on the other hand, further independent examination should show it to be only generally similar, then it may possibly be indigenous. It may also be accepted that if the skull can be proved to have been brought from far inland, then we have better evidence that Negritoes exist or existed in Borneo.

In Professor Sir William Flower's "Catalogue, Royal College of Surgeons" (London, 1879), p. 125, he thus remarks on skull No. 745: "A cranium, said to be that of a Dyak. . . . It presents more Melanesian than Malay characters, and may be of Papuan origin, as Papuans are often taken to Borneo as

slaves." It will be observed, Sir William Flower does not jump to the conclusion that Papuans are indigenous to Borneo.

In this enquiry no reference is made to the presence of the Negrito in prehistoric times. If, as now appears to be generally accepted, the Negro family, like the rest of mankind, had its origin in the Indo-African continent (Keane's "Ethnology," pp. 229, 242), it may be probable that Negritos once existed in Borneo. On the other hand, Borneo is comparatively new. It consisted originally of a few islands, which were later on joined together, and ultimately took on a shape very similar to that of Celebes now, the larger portion of the present form of Borneo being recent geologically, tertiary and post tertiary (see Posewitz).¹ As one island it probably did not exist at the time of the final disappearance of the Indo-African continent. The only stone implement found so far is the neolithic one illustrated in the J.A.I., i, P.E.S., p. xxxix, found by Mr. A. Hart Everett, but others may yet be found. The evidence of an ancient occupation of the island is still wanting, and with it necessarily any trace of Negrito occupation. As for the present day the existence of the Negrito in Borneo has yet to be proved.

DISCOVERY of EVIDENCES of the PALEOLITHIC STONE AGE in
SOMALILAND (*Tropical Africa*). By H. W. SETON-KARR.

[WITH PLATES XIX-XXI.]

LAST September at the British Association Meeting at Ipswich, I exhibited some stone implements which I had discovered during my third and fourth journeys in Somaliland, and I stated that this was the first evidence of the stone age found in tropical Africa. During my third expedition, I met a gentleman in the interior of Somaliland, a merchant and banker residing at Aden, to whom I explained the nature of my discoveries, and gave a few specimens, asking him not to mention the subject to anyone in Aden on his return until I had more thoroughly searched the district for specimens. He appears, however, to have told the French at Jibuti, for in the last quarter's "L'Anthropologie" there is an article on the subject mentioning him as an intelligent traveller, and figuring some implements of a much ruder type than the majority of those I have since then discovered. The specimens first exhibited indicated, by the weathering of them, very great antiquity, but Sir John Evans was doubtful whether they might belong to the early neolithic period or to the palæolithic, as the

¹ "Borneo: Its Geology and Mineral Resources," Lond. 1892, pp. 259-260.

position in which they were found gave but doubtful evidence as to their age. Equipped with the experience of four previous expeditions, during which I have traversed the flint producing district in various directions, and now more precisely knowing where they were *not* to be found, I was able to confine myself to searching the most promising places, occupying altogether a period of about three weeks, during which I moved camp almost daily. I was also better acquainted with the forms of the larger and heavier paleoliths which I had not previously seen, but which might be expected to occur, of a size equal to those found in the gravel drifts of the valley of the Somme. The result was the discovery of numbers of very heavy and perfect weapons, principally in one spot, and of the forms outlined in the accompanying tracings. With the object of determining, if possible, to what period they belong, I endeavoured to ascertain more exactly in what position, depth below the surface, and locality, they principally occur, and also why I discovered more in some places than in others, and in what spots further discoveries are likely to be made. My observations, so far as it might be possible to an untrained observer, led me to the following conclusions:—(1) Stone implements in Somaliland are found *scattered all over the country*, but probably mostly below the present surface, within a district included roughly between the Red Sea and lat. $9^{\circ} 30'$ N. and between E. long. 44° and 45° . I so judged from the fact of finding flint flakes and cores, and sometimes perfect implements, uniformly distributed, but not of frequent occurrence; also chips of other kinds of stone, and in some places marks of very ancient fracture by blows on almost every stone of workable size and suitable material. Also, but less frequently I found the above objects partially buried. The majority of the specimens of worked and more or less perfect implements were confined to four or five places of limited extent, the reasons of which I have endeavoured to set forth below. These spots presented the same distinct physical features in every case:—(a) the soil, sandy or earthy, was and is in process of being gently washed away by showers or blown away by wind, leaving the surface in a state of gradual denudation. I must state with reference to this, that though there are no statistics obtainable, so far as I am aware, with reference to the rainfall in Somaliland, it is well known to be small, and to occur in the form of showers. These places were bare of plants and grasses, and could be seen and recognised from any elevated spots, for many miles round. This fact greatly assisted my search. In some cases the soil being all washed away had left the bed-rock exposed. In this case the imple-

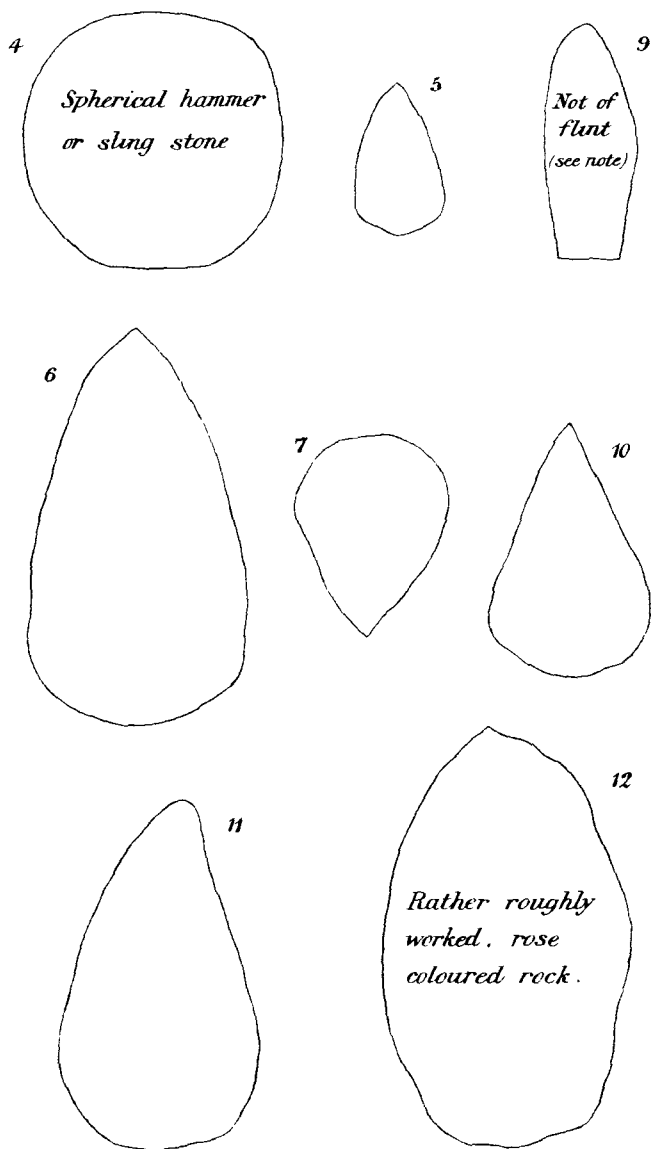
ments were mixed with more modern *débris* from the rock itself, and not so easily discovered. (b) There must be no possibility of any fresh deposition, by wind or water, of earth, sand and stones on the implement-bearing places. (c) These places must be sought for near the summits of isolated ridges and hills, where (through gradual and continual denudation) there has been no possibility of their being again covered up, or of any material being drifted or blown upon the surface. (d) The surface on which they lie must have a gentle and continuous slope, and not too steep, or the implements and stones of other kinds would be washed down with the finer material, buried, and lost in the gullies and sandy torrent-beds below; also not too level, or the rain-water would sink in, the soil not be carried away, and the implements would remain buried, and never brought by natural causes to the surface at all. (e) The assumption that ever since the last glacial period the climate has been the same in this district, and that there have been only a few showers of rain, about twice a year; or the assumption that the rains have been torrential, would make no difference. These spots being near the summits of isolated long low hills, would not be subject to the action of floods, and the rainwater would flow off almost as soon as it fell. The flat-shaped flint implements, therefore, with the convex side invariably downwards and the flat surface flush with the surface of the sand, are able with their sharp edge to stem the flow, and these occur in consequence more frequently, and on steeper slopes than the thicker ones which have been washed downwards. (f) The less encumbered these places are with rocks and stones of all sorts, the more easily are the implements discovered; also, this absence of stone assists denudation and prevents growth of plants. On certain spots of limited extent I found no stones upon the surface, which did not bear some traces of work by prehistoric human hands.

The above then were the conditions of discovery. Under this process of sifting by denudations, implements of, I think, different age and styles were found in consequence mixed together, and while some were not much weathered, others were extraordinarily so, and seemed to me to bear traces of a long submersion at the bottom of the sea. I hope, however, in April next, when my cases will have reached England, to learn from those who are qualified to tell us, the reasons of the diversified appearances which the implements present, and of the causes which have produced a remarkable condition in some of them.

OUTLINE OF STONE IMPLEMENT, NATURAL SIZE.



TYPES OF SOME OF THE IMPLEMENTS (MOSTLY OF FLINT)



a glossy texture. It was found at a height of 3,400 feet above the Red Sea. Many others of a different size, age and style, as well as a few similar ones, were found near it, and many spherical hammer or sling-stones (see Plate XXI, fig. 4) which had undergone a similar process of erosion. I regret that owing to my not appreciating their true character I only brought one of the latter to the coast. Some of the implements have such an aspect of vast antiquity that they look as though they might have been used in palæolithic times.

PLATE XXI.

Fig. 4.—Spherical hammer or sling-stone.

Figs. 5-7.—Different types of implements.

Fig. 9.—The only one found of this shape—of opal siliceous rock with pearly grain, perhaps diorite?

Figs. 10, 11.—Different types of implements.

Fig. 12.—Rather roughly worked, rose-coloured rock.

cannibal Battaks, the Rejangs, and others of Sumatra, the Bugis and Mangcassaras of Celébes, the Tagalas and Visayas of Luzon and other Philippine islands, the natives of Palawan and especially the Javanese, who have a written literature dating back to a very remote period.

To these must now be added the Manguianes of Mindoro, who were not known to use a peculiar style of writing till quite recently. In fact, despite the analogous instances of the Battak and Palawan peoples, the pagan Malayan or Mongoloid natives of Mindoro whose collective name *Manguian* simply means "bushmen," were not credited with a knowledge of letters until the phenomenon was placed beyond doubt by Herr Schadenberg's careful examination of some inscribed bamboo canes of Mindoro provenance lately forwarded to the Dresden Ethnographic Museum from the Philippines. Schadenberg's conclusion partly anticipated and suggested by Cipriano Marcilla y Martin, is fully confirmed by Dr. A. B. Meyer, a name for many years inseparably associated with Malaysian ethnological and antiquarian researches, and by Herr W. Foy, his fellow-worker in the Museum. The monograph under consideration, the joint product of these anthropologists, deals not only with the bamboo cylinders, seven in number, but also with some other inscribed objects directly or indirectly from Mindoro which already formed part of the collections, but the significance of which has only now been revealed by the results here given of the comparative study of these inscriptions, all of which are accurately reproduced on the accompanying photographic plates.

It was long known in a general way¹ that the native scripts above referred to all bore a family likeness, and that they were ultimately traceable to one source, the Pali system of King Asoka's rock inscriptions (third century B.C.). It thus became evident that their prototype was introduced into the Archipelago by the Hindu missionaries, under whose influence were also raised the stupendous Buddhist and Brahminical monuments of Java and Indo-China. Here it is further shown, and indeed proved to demonstration, first that all the Manguianish letters (for there are several variant forms) belong, as might have been suspected, to the Philippine group (Tagal, Tagbanu, Palawan, &c.), and second, that this group itself "is a branch of that stock alphabet, other offshoots of which are to be found especially in Camboja, Java, Sumatra, and Celébes" (p. 21).

In the general history of the Philippine group, contributed by Herr Foy, a diagram is introduced (p. 28) to show the various ramifications of the different members of this group in the islands, and their derivation from a common source, presumably the archaic syllabic alphabet whence sprang the Kavi and the later forms employed in Javanese literature. All this, taken in connection

¹ Fr. Müller, "Ueber den Ursprung der Schrift der Malaiischen Völker," Vienna, 1865; A. H. Keane, "Australasia" (Stanford Series), 1879, "Appendix," p. 624.

with the wonderful ruins of Borobodo and other temples of less note in the interior, points to Java as the centre of the Hindu culture, which from this region was diffused over the whole of Malaysia from Sumatra to the Philippines many centuries before the Muhammadan invasion. All the more remarkable is the survival from such a remote epoch of these various writing systems, especially amongst such extremely rude peoples as the Sumatran Battaks, the natives of Palawan and the Manguianes of Mindoro, who have for ages been cut off from all civilising influences, and many of whom stand at present at a stage of culture little to be distinguished from that of pure savages.

In the accompanying plates, which are beautiful specimens of photographic art, the bamboo cylinders and other inscribed objects are reproduced with the utmost fidelity. A separate plate is also devoted to a comparative table of no less than eleven alphabets of the Philippine Archipelago with Palawan, including all the known Manguianish forms. By the aid of this table the genesis of the several letters may be easily followed, and traced back with great confidence to a primitive Tagal prototype. This prototype, first published by Lopez, holds a position intermediate between all the later Philippine forms and the postulated stock alphabet of Java. Several of the letters (*k, g, b, l, &c.*) still show a surprising resemblance to the primitive Indian forms, a resemblance as close as that which has for ages been preserved between the archaic Greek and Italic and the later Latin still surviving amongst most European peoples.

A. H. KEANE.

"Criminal Sociology." By Enrico Ferri. (T. Fisher Unwin.) 1895. "The following pages are a translation of that portion of Professor Ferri's volume on Criminal Sociology which is immediately concerned with the practical problems of criminality." It consists of three chapters. "The first chapter, on the Data of Criminal Anthropology, is an enquiry into the individual conditions which tend to produce criminal habits of mind and action. The second chapter, on the Data of Criminal Statistics, is an examination of the adverse social conditions which tend to drive certain sections of the population into crime." The third chapter suggests certain practical reforms.

The book represents the positive or scientific School of Criminology, which aims not at retributive justice, but at social defence. It is an indictment of the prevailing habit of weighing the crime in minute scales, and disregarding the criminal; what civilisation requires is the abandonment of the apothecaries' method which doses out punishment in doses, scruple by scruple, and the establishment in its place of a sound system of social hygiene.

"Our task is to show that the basis of every theory concerning the self defence of the community against evil-doers must be the observation of the individual, and of Society in their criminal activity." . . . "Correction of the individual is not sufficient to prevent relapse if we do not also, to the best of our ability reform

the social environment. . . . Crime is the effect of anthropological, physical, and social conditions which evolve it by their simultaneous, inseparable operation."

"Experience shows that prevention is better than repression, as we can best protect ourselves against inundation by obeying the laws of hydrostatics and hydrodynamics, and by timbering the banks near the source of the stream, and by due rectilineation or excavation along its course and near its mouth, so, in order to defend ourselves against crimes, it is best to observe the laws of psychology and sociology, and to avail ourselves of social substitutes, which are far more efficacious than whole arsenals of repressive measures" (p. 142).

The author lays continual stress on the uselessness of penal law as a deterrent in the case of born criminals, and insists again and again on the necessity of studying criminality through anthropology and statistics. Among the more prominent suggestions are the following:—"that schools of 'clinical criminology' should be established for law students, warders and policemen, that judges should have a practical acquaintance with anthropology and criminal sociology; that the system of indeterminate segregation, terminable only on the decision of a commission of experts, should be adopted; and that in the case of theft rigid indemnification should take the place of the short terms of imprisonment now in vogue." The author has much to say against absolute cellular isolation.

It is certainly desirable that the views of the Italian School of Criminology should be given to the English reader in a concise and convenient form; and Messrs. Unwin are to be congratulated upon this second volume in "The Criminology Series."

Pagan Ireland: an Archæological Sketch. A handbook of Irish Pre-Christian Antiquities. By W. G. Wood-Martin. London: Longmans, Green and Co., 1895. 8vo. 689 pp., 410 figs.

Col. Wood-Martin has broad views on the range and significance of Archæology. He realises that its aim is to make known to us the social history of primitive man, and he includes within it the study of folk-custom and belief; in other words folk-lore and antiquarian research into remains should go hand-in-hand. The author speaks with no uncertain sound on the persistence of paganism into modern times, and he supports his conclusions with numerous facts. Although he deals with ancient facts and practices, the greater part of the book is naturally devoted to Irish Archæology in the more restricted sense of the term, and the book forms a useful and much-needed introduction to that subject. Anthropologists need not consult the book for information as to the early races of Ireland, as the author is very weak in this department, nor does he give us suggestive generalisations. He enumerates archæological data and classifies objects according to their shapes, but we miss those discussions of the problems of origin and distribution which alone infuse a living interest into

the somewhat dry bones of antiquarianism. The author is a well known archæologist, more especially for his researches into the crannogs and rude stone monuments of Ireland, and it is evident that he has been at some pains to get up the literature of his subject; but he appears to have very largely limited his attention to Irish publications. A most valuable feature of the book is the classified bibliography, which consists of over a thousand entries, so that, with this, and with the book itself, it should be possible to discover what has been done in any section of Irish archæology, so far as Irish journals only are concerned. The book is well illustrated, nicely got up, and capitally indexed. A. C. H.

"Evolution in Art, as illustrated by the Life Histories of Designs." By Professor Alfred C. Haddon. (London: Walter Scott.) 1895. [Contemporary Science Series.]

It is impossible to speak too highly of this most unassuming and invaluable book. Its aim is to inculcate the study of decorative art from the scientific or biological standpoint as opposed to the subjective and too often highly empirical standpoint of "æsthetic" criticism. Only by the study of the life history of designs, of their origin in some far away field of realistic conception, their evolution and conventionalisation under varying geographic and racial influences, their final assumption of apparently the most heterogeneous forms, can the student hope to escape the multitudinous pitfalls with which his path is beset. Indeed, the whole work is, as it were, a sermon against *à priori* conclusions, against that blind reasoning from alluring but inadequate analogies which has only recently fallen into discredit, though it is itself essentially an attribute of the "savage" or untrained mind. In the words of the author: "I have often called attention to the danger which there is in assuming that similarity is identity, the most instructive example of this being exhibited in the fret-pattern group, and the allied scroll-patterns. . . . One of the main objects of the present volume is to emphasise this fact, and to demonstrate that the signification of a design, that is, what it really is, can only be ascertained by an exhaustive study of that particular region where it occurs or whence it has been derived. Analysis must precede synthesis." And again: "Before any pattern can be termed the same as another, its life history must be studied, otherwise analogy may be confused with homology, and false relationships erected. Things which are similar are not necessarily the same."

The book commences with an example or model of the scientific method, drawn from the decorative art of British New Guinea, a field which the author has made peculiarly his own. Having thus as it were visualised his meaning by a concrete instance, he proceeds to illustrate its application in the case of a large number of designs, familiar and unfamiliar, many of which most men are apt to consider as having sprung into existence by a kind of spontaneous genesis, as Athena sprang, full-armed, from the head of Zeus. The body of the book is divided into two main sections:

I. "The material of which patterns are made"; which treats of Transference and Transformation as illustrated in Skenomorphs, Biomorphs, &c., the subject being made admirably clear by well-chosen examples drawn from the art of cultured and "savage" peoples, and supported by a constant succession of explanatory woodcuts. II. "The reasons for which objects are decorated"; viz., Art, Information, Wealth, Magic and Religion, in the elucidation of which the widespread affinities obtaining between the thoughts of the human mind, and the works of the human hand, are given their due prominence. In this section, amongst other examples too numerous to mention, the student is given a summary of the evolution of the phonetic alphabet from the pictograph, the history of the fylfot, and many concise and valuable remarks on totemism, symbolism and other kindred subjects which link art and psychology together.

The conclusion of the book is occupied with a discussion of the advantages accruing from the scientific method, and with advice to those who may devote themselves to it; the deduction to be drawn from the whole matter being that, like the design which it studies, the critical faculty cannot be turned out ready-made, but must itself be slowly evolved by a patient and laborious process. Professor Haddon in corroboration of his theory, has confirmed his own results by examples of similar work done by other investigators, amongst whom may be specially mentioned Messrs. Cushing, Holmes, Goodyear, Goblet, d'Alviella, H. Colley March, Read, Von den Steinen, and Stolpe. In addition to the numerous cuts inserted in the text, there are eight plates at the end of the book, as well as an index. Not very long ago Professor Petrie, was taken to task by a certain journalistic critic for stating at Ipswich that "the theory of art has been grounded more assuredly by anthropological research than by all the speculations that have been spun." Professor Haddon's small book, which is accessible to all, will have done more than anything else to explain and to justify Professor Petrie's contention.

"Icebound on Kolguev." By Aubyn Trevor-Battye. (Archibald Constable and Co.) 1895. In these pages Mr. Trevor-Battye tells the story of his partly involuntary residence on the Island of Kolguev. Quite apart from the interest which it has for ornithologists and geographers, this book is important as giving an account of home life among the Samoyeds, with descriptions of their sledges, reindeer teams, of their method of driving geese, of their weapons used in the chase,—the drift-wood bow, and the "parlka," or short missile club studded with nails,—and of the migratory existence in tent and "choom." The author bears strong testimony to the amiability and intelligence of the Samoyeds, considering that they have hitherto been placed too low in the human scale. Facsimiles of drawings made by Onaska of Kolguev are given: from these, as well as from numerous traits of character and habit, it would certainly seem that the people of the tundras have

often been misjudged. Like many other primitive peoples the Samoyeds manage to combine paganism with Christianity, and their "bolvans" or little wooden idols are under their clothes, while they stand before the ikons. After a death, a broken sledge with a spoon is deposited upon the Sacred Hill of Nûm: in former times the corpse was exposed upon the tundra. Altogether the Samoyeds appear to form happy and friendly communities, while a considerable indulgence in raw flesh in no way impairs the sweetness of their disposition. This handsome volume, written throughout in an easy, unpretentious style, is rendered still more valuable by some beautiful illustrations by Mr. J. T. Nettlehip and Mr. Whymper, as well as by numerous reproductions of photographs and sketches taken by the author on the spot. At the end of the book is a list of birds, an index, and coloured maps.

"A Perambulation of the Antient and Royal Forest of Dartmoor, &c." By the late Samuel Rowe, M.A. 3rd edition, revised and corrected by J. Brooking Rowe, F.S.A., F.L.S. Illustrated from drawings by F. J. Widgery. (Gibbings and Co., Ltd., London.) pp. 516. 8vo. 1896. This fair and portly volume is a new edition of a book of which the first and second editions, published in 1848 and 1856, have become scarce. The Editor, who is the grandson or nephew of the original author, while disagreeing with many of the opinions expressed in the previous editions, has very properly not felt inclined to suppress them, but has preferred to state the other side to the questions at issue, and by this means, and by the addition of the latest information obtained on a variety of points by the efforts of the numerous local observers and others, and by the further addition of fresh matter generally, has swelled the volume to about three times the size of its predecessors. In addition to the pages devoted to the "Perambulation," or detailed description of Dartmoor, the book contains chapters on its early inhabitants, monumental relics (so interesting to the anthropologist), geology, petrology, mineralogy, soil, agriculture, minings, prisons, historical documents, fauna, flora, churches, literature, and many other matters, the index to which occupies 16 pages. It is illustrated by 25 full page plates, several vignettes and woodcuts, and five large and useful maps. If as the Editor says in his preface, no guide to Dartmoor has ever been found so useful as the first edition of this work, it will assuredly be at least another half century before another book will appear which will supersede the new edition.

"The Badminton Library: Dancing." By Mrs. Lilly Grove, F.R.G.S., and other writers. (Longmans), 1895. Mrs. Grove, to whom we owe some seven-eighths of this book, has endeavoured to compress within the narrow limits of a single volume a mass of information illustrating the dances of various peoples in all centuries, and in almost all the quarters of the inhabited world. The dance is traced from its ritual origin to its present modern developments, and the book is throughout liberally provided with

illustrations, some few of which, as reproductions from ethnological books, will be familiar to anthropologists. The general reader will find this number of the Badminton Series both interesting and attractive.

"An Account of Palmyra and Zenobia," with Travels and Adventures in Bashan and the Desert. By Dr. William Wright, 1895. A bright and readable account of two expeditions from Damascus to Palmyra and Bashan. The present condition of the city of Zenobia is brought vividly before the reader, and a description is given of explorations amid the well-known mortuary towers. A constant succession of illustrations large and small, serves to impress on the mind the extent of the old Palmyrene civilisation, and the external majesty of the city, under the dominion of Odainathus, and the "Sitt Zeinab." There are incidental glimpses of the daily life of the Bedawin, the Suleib Arabs, and the Druses of the Hauran: and the perilous pleasures of desert travel in outlying parts of the Turkish Empire are depicted with a humour which makes much of the book very good reading.

"The Hill Caves of Yucatan." A Search for Evidence of Man's Antiquity in the Caverns of Central America. By Henry C. Mercer, Philadelphia. (Lippincott), 1896. This book describes the "Corwith Expedition" of the Department of Archæology of the University of Pennsylvania, carried out under Mr. Mercer himself. After searching 29 caves in the hills of Central Yucatan, the conclusion arrived at was that there is no evidence of the existence "of an earlier man, or a Palæolithic Visitor, antedating the Mayas by thousands of years." The volume is well illustrated by a large number of cuts and reproductions from photographs, representing the interiors of the caves, various strata, "finds" of bones, potsherds, &c., together with pictures of ruins, rock carvings, natives, and other interesting subjects. At the end of the book there is an important note on the modern Maya process of making pottery with a thick wooden disk or "kabal"; a classified list of vertebrata obtained in the caves, drawn up by Professor Cope; and an index. The general get up of the book leaves little to be desired.

"The Japs at Home." Fifth edition. To which are added for the first time some bits of China. By Douglas Sladen. (Ward and Lock), 1895. A lively and readable history of the author's travels in Japan and some of the Chinese ports. As the title of the book suggests, these pages are concerned principally with the picturesque incidents of domestic and social life in the Empire of the Mikado. The work is illustrated by numerous woodcuts.

"The American Antiquarian." Vol. xvii. Nos. 5, 6. (No. 5.) The Sacred Pole of the Omaha Tribe, by Alice C. Fletcher. Egyptological Notes, by W. C. Winslow. The Beginnings of History, by S. D. Peet. The Mystery of the name Pamunkey, by

W. W. Tooker. *Ethnographic Notes, &c.* (No. 6.) The Cherokees and their neighbours, by A. Downing. Ancient Mounds in Northern Minnesota, by T. H. Lewis. Indian Nations of the Great Lakes, by W. M. Beauchamp. The Frescoes of Mitla, by P. J. Valentini. Flint Implements or Thunder Stones. The Indian as a Citizen, by James Wickersham. Exploration of the Temple of Bel, by Professor H. V. Hilprecht. The Menhirs of Meudon, translated from the French by R. G. Abbott. The Discovery of the Pueblos, by S. D. Peet. *Egyptological Notes*, by W. C. Winslow. *Archæological Notes, &c.*

"The Journal of Mental Science." Vol. xli, No. clxxv; and Vol. xlii, No. clxxvi. (No. clxxv.) Presidential Address delivered at the 54th Annual Meeting, by D. Nicolson. *Experimental Psychology in Relation to Insanity*, by W. H. R. Rivers. *Rest and Exercise in the Treatment of Nervous and Mental Disease*, by T. S. Clouston and J. Batty Tuke. *The Pathology of Milkiness, Thickening, and Opacity of the Pia-arachnoid in the Insane*, by W. F. Robertson. *On Thyroid Feeding, based upon the study of a second series of sixty cases*, by L. C. Bruce. *Public Provision for Pauper Idiots and Imbeciles in England and Wales*, by G. E. Shuttleworth. *Some Remarks on the Forcible Feeding of Insane Patients*, by A. R. Turnbull. *Criminal Responsibility in Relation to Insanity*, by H. Maudsley. *The Insanity of Love, a Study of Ariosto*, by H. Kornfeld, and *Clinical Notes and Cases*. (No. clxxvi.) *Insanity of Conduct*, by G. H. Savage and C. Mercier. *Mental Symptoms occurring in Bodily Diseases*, by E. S. Reynolds. *Mental Changes in Graves' Disease*, by A. Maude. *Mental States Associated with Visceral Disease in the Sane*, by H. Head. *Some Points in the Relation of Diabetes to Insanity*, by C. H. Bond. *The Surgical Treatment of Idiocy*, by G. E. Shuttleworth. *Craniectomy, with the After-History of Two Cases (with Plates)*, by T. Telford-Smith. *Voluntary Boarders in English Asylums*, by R. P. Smith. *The Law of England in Relation to Single Patients*, by L. A. Weatherly. *On Recent Proposals Regarding Habitual Drunkards and other Offenders*, by A. Wood-Renton and D. Yellowlees. *The Uses and Limitations of Mechanical Restraint as a means of Treatment of the Insane*, by P. Maury Deas; and *Clinical Notes and Cases*.

"The American Anthropologist." Vol. viii. No. 3. *The God "D" in the Codex Cortesianus*, by J. W. Fewkes. *The Early Navajo and Apache*, by F. W. Hodge. *The Relation of Sociology to Anthropology*, by Lester F. Ward. *The Name Chickahominy*, by W. W. Tooker. *A Yuma Cremation*, by G. R. Putnam. *Australian Rock Pictures*, by R. H. Mathews. *Some Principles of Nomenclature*, by W. J. McGee. *Notes and News. Bibliography of Anthropologic Literature.*

"Transactions and Proceedings of the Japan Society." Vol. ii, part 3. *The Family and Relationships in Ancient Japan*

(prior to A.D. 1000), by W. G. Aston. Wood and its Application to Japanese Artistic and Industrial Design, by George Cawley.

"Revue Mensuelle de l'Ecole d'Anthropologie de Paris."

Ann. v. Nos. x-xii. (No. x.) L'Albinisme, par P. G. Mahoudeau. Chronique Palethnologique, par G. de Mortillet. (No. xi.) Excursions de 1895. Cours d'Ethnographie comparée, par A. de Mortillet. Une visite à la Ballastière de Tilloux, par L. Capitan. (No. xii.) Les Dieux de la Gaule, par A. Lefèvre. Types Craniens Néolithiques, par Ph. Salmon.

"L'Anthropologie." Tome vi. Nos. 5, 6. (No. 5.) La Ballastière de Tilloux, près de Gensac-la-Pallue (Charente), par M. Boule. Goulofs, Leybous et Lérères, par le Dr. R. Verneau. L'Infantilisme, le Féminisme et les Hermaphrodites antiques, par H. Meige. La Sculpture en Europe avant les influences gréco-romaines, par S. Reinach. (No. 6.) Recherches sur la poids du cerveau chez les aliénés de l'hospice Saint-Jean, à Copenhague, par F. Meyer et P. Heiberg. Étude sur le mariage chez les Polynésiens (Mao'i) des îles Marquises, par le Dr. Tautain. Les stations préhistoriques des environs de Marseille, par E. Fournier. La Sculpture en Europe avant les influences gréco-romaines, par S. Reinach.

"Proceedings of the Society of Biblical Archæology."

Vol. xvii. Nos. 6-8. (Nos. 6, 7.) The Book of the Dead, chapter cxxv, Part I, by P. Le Page Renouf. Sennacherib's Letters to his father Sargon, by Rev. C. H. W. Jones. The Descent of Property in the Early Periods of Egyptian History, by Miss M. A. Murray. Akhuenaten and Queen Tii, by A. C. Bryant and F. W. Read. Coptic Fragments, by John E. Gilmore and P. Le Page Renouf. Notes de Philologie Egyptienne, by Prof. K. Piehl. (No. 8.) The Book of the Dead, Chapter cxxv, Part iii, by P. Le Page Renouf. Water Rate in Ancient Babylonia, by T. G. Pinches. Egyptian Chronology, by Prof. A. Eisenlohr. Euphatean Stellar Researches. Part v. The Archaic Lunar Zodiac, by Robert Brown, jun.

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

DECEMBER 10TH, 1895.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The presents which had been received were announced and thanks voted to their respective donors.

The elections of Messrs. ORMONDE M. DALTON and GEORGE LAWRENCE GOMME were announced.

Mr. J. EDGE-PARTINGTON exhibited and made remarks upon a collection of Ethnographical objects from Matty Island.

The following papers were read:—

“The Game of Teetotum, Queensland.” By R. ETHERIDGE, Jun., Esq. (See *antea*, p. 259.)

“Stone Cooking-Holes and Grooves for Stone-Grinding, used by the Australian Aborigines.” By R. H. MATHEWS, Esq. (See *antea*, p. 255.)

“The Būrbūng of the Wiradthuri Tribes.” By R. H. MATHEWS, Esq.

“The Bora, or Initiation Ceremonies of the Kamilaroi.” Part II. By R. H. MATHEWS, Esq.

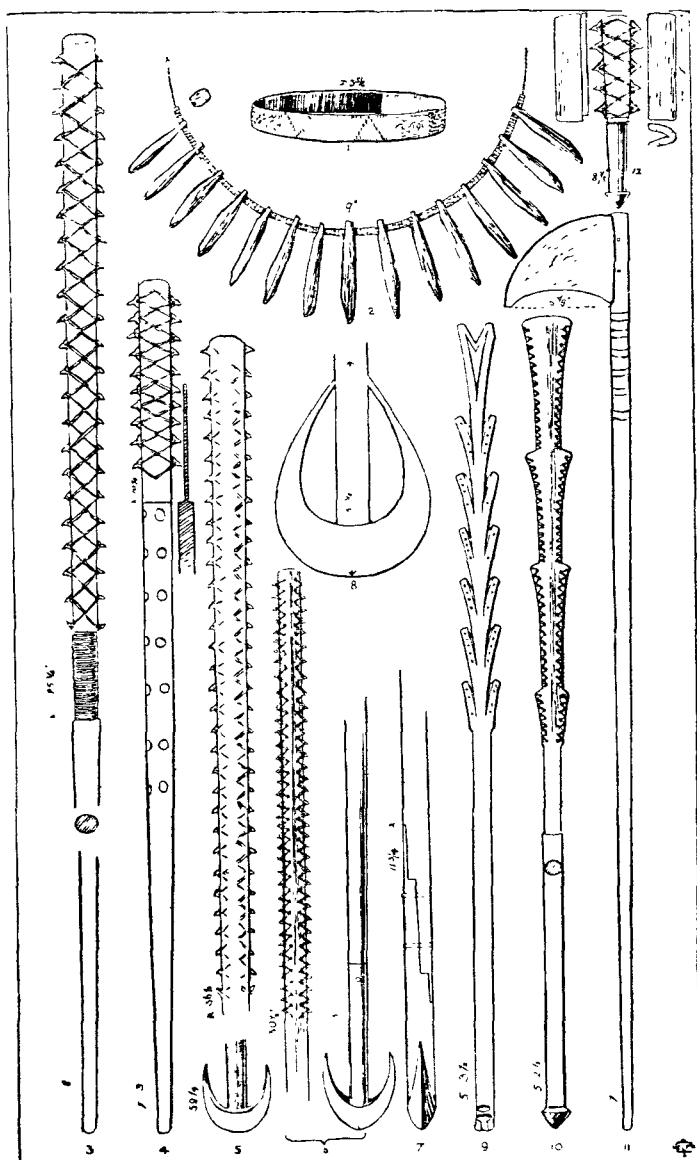
The ETHNOGRAPHY of MATTY ISLAND. By J. EDGE-PARTINGTON.

[WITH PLATES XXII-XXIV.]

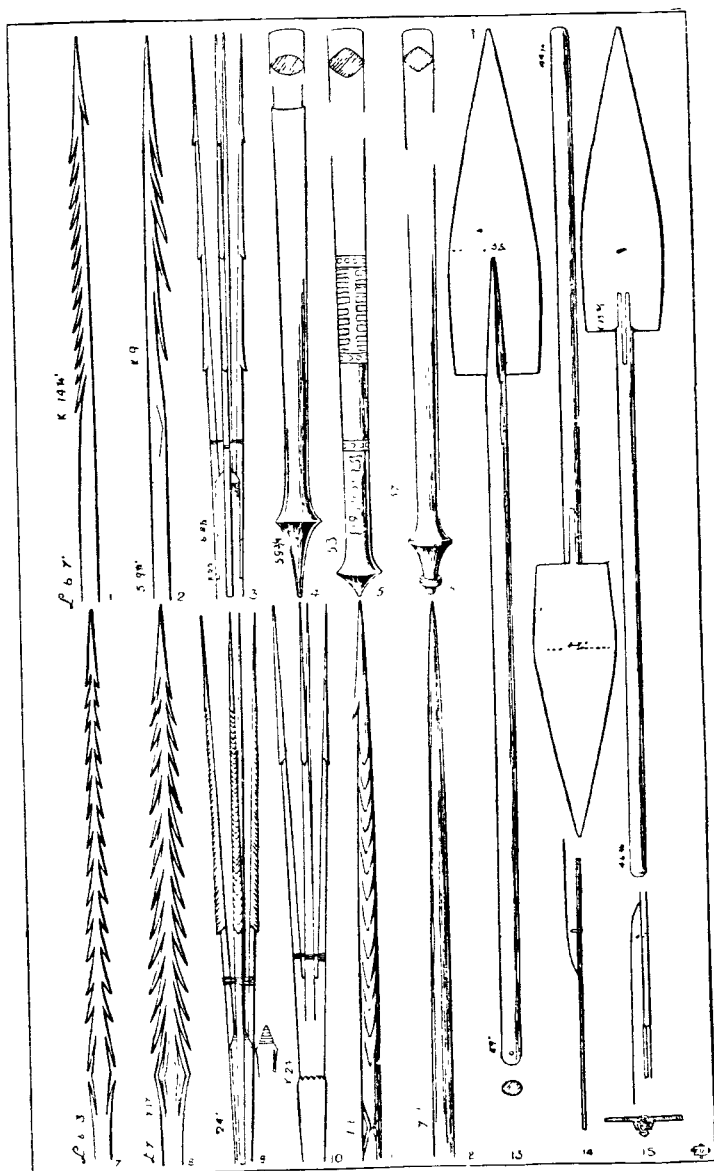
FRESH surprises are ever in store for the ethnologist and collector, but it is almost impossible to realise that in this nineteenth century there could exist a new world and new people with, to us, fresh surroundings, but this till quite recently has been the case. Matty Island, the subject of this notice, was discovered by Carteret on September 19th, 1767 ("Hawkesworth," i, p. 606), if seeing the shores of some unknown land by night can be called discovery. Captain Bristow in 1817 sailed through this part of the archipelago in the "Sir Andrew Hammond," and gave his account to Mr. John Purdy, the hydrographer. He gave the name of Tiger to the island, I presume on account of the inhabitants, whom he described as "a ferocious race of savages." I think there can be little doubt that these two names refer to one and the same island. Nothing further was known of this island or of its inhabitants until 1893, when Captain Dallman visited it for the purpose of collecting coolies for the German New Guinea Company, and the specimens and information he then obtained formed the subject of a sketch by Dr. Von Luschan of Berlin in the "Archiv für Ethnographie," vol. viii, 1895. Dr. von Luschan gives a very full and graphic account of the island and the specimens lately presented to the Berlin Museum; he is, however, wrong in imagining that no specimens from this locality existed in other museums. Granted that their localities were unknown, still there did exist specimens in the British Museum, and in others also. These, thanks to Dr. von Luschan, we have now been able to place in their right section.¹ Dr. von Luschan is also wrong when he states that the axe figured by him Taf. V, Fig. 4, has never yet been described, for similar specimens are in the Turvey Abbey Collection, one of which is figured in the Album (Plate 132, No. 2).

Early in this year a shipment of specimens from Matty Island reached this country and were dispersed by auction in London, and a portion of them was purchased by Sir A. W. Franks, and presented to the Christy Collection in the British Museum. At the same time I was able to add a selection to my own collection, and these I have since exhibited to the members

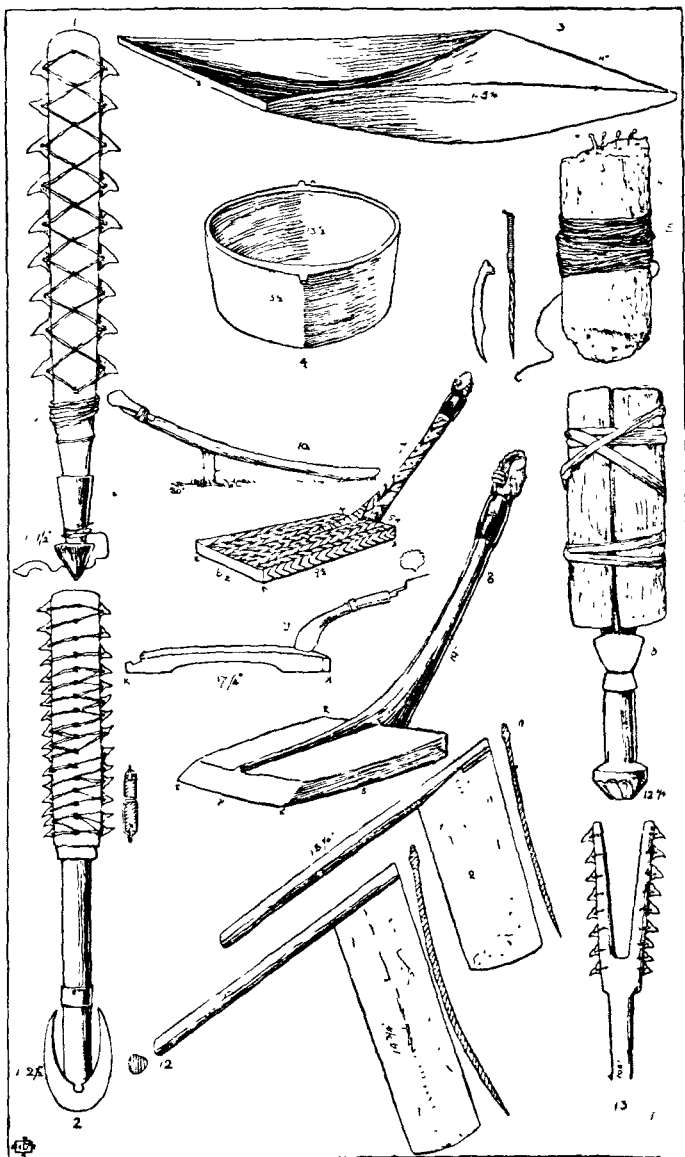
¹ Foremost amongst these specimens are the ones figured in the Album, Plate 54, Nos. 1 and 2, Plate 237, No. 2; Plate 271, No. 12, and 2nd Series, Plate 37, No. 5, the latter a specimen which has since Mr. Brown's death been purchased for the British Museum. "An Ethnographical Album of the Pacific Islands." By Edge-Partington and Heave. Manchester. 1890-1895.



No. 1. Grass armlet, Christy Coll. No. 2. Shell necklace, Christy Coll. Nos. 3-7. Shark's tooth weapons of hard red wood, Christy Coll. No. 8. Butt of shark's tooth weapon. Edge Partington Coll. No. 9. Shark's tooth weapon of brown wood, Christy Coll. No. 10. Shark's tooth weapon of pale reddish wood, Christy Coll. No. 11. Battle axe of turtle bone, stained design on shaft, Christy Coll. No. 12. Small shark's tooth weapon—pith sheath, Christy Coll.



- No. 1. Javelin of hard wood, Christy Coll. No. 2. Dart of hard wood, Christy Coll. No. 3. Fish spear, shaft of light pale wood, hard wood points, Christy Coll. No. 4. Club of heavy brown wood, Christy Coll. No. 5. Club of heavy red wood, stained design, Christy Coll. No. 6. Club of heavy brown wood, Christy Coll. Nos. 7, 8. Javelins of hard wood, Christy Coll. No. 9. Fish spear, shaft of light pale wood, hard wood points; Edge-Partington Coll. No. 10. Fish spear of heavy brown wood, Edge-Partington Coll. Nos. 11, 12. Javelins of hard brown wood, Edge-Partington Coll. No. 13. Paddle of hard pale wood, Christy Coll. Nos. 14, 15. Paddles of hard brown wood Christy Coll.



Nos. 1, 2. Small shark's tooth weapons of hard pale wood, Edge-Partington Coll. No. 3. Food dish of hard brown wood, Edge-Partington Coll. No. 4. Food bowl of hard brown wood, Edge-Partington Coll. No. 5. Fishing line and gorges, Edge-Partington Coll. No. 6. Small shark's tooth weapon in sheath, Christy Coll. No. 7. Coconut scraper of heavy red wood, stained design, Christy Coll. No. 8. Coconut scraper of heavy brown wood, Christy Coll. No. 9. Coconut scraper of hard pale wood, Perak, Christy Coll. No. 10. Coconut scraper, Ladrone Is. No. 11. Hatchet of turtle bone, Edge-Partington Coll. No. 12. Hatchet of turtle bone, Christy Coll. No. 13. Shark's tooth weapon, Turvey Abbey Coll.

of the Institute. Together with those now in the British Museum, they are figured at the end of this notice.

I think it may be of interest if I give a short epitome of Dr. von Luschan's paper.

He fixes the position of *Matty Island* at 15 kilometres N. of the coast of New Guinea, opposite the mouth of the Bastian and Hochstetter River, lat. 2° S. long. between $142'$ and $143'$ E. Carteret fixes it at $1^{\circ} 45'$ S. lat. $145^{\circ} 2'$ E. long. The dimensions of the island are somewhere about 20 sq. kilometres. It is flat, covered with cocoanut trees, and, so far as is known, surrounded by reefs. It is thickly populated, and the natives are timid, and at the same time, inquisitive. "They are considerably lighter in colour than any Melanesians, some even possessing a ruddy flesh tint. Their eyes are slit, much like the Chinese, noses narrow, and hair black and smooth, generally hanging in loose curls." This description also applies to the natives of the Anchorite Islands. "Their heads, judged by the hat-like head-dresses, Taf. VI, Figs. 19, 20, are rather large, showing a circumference of 21 to 22 inches."

Dr. von Luschan's informant, who was well acquainted with the Malay tongue, as well as others spoken in German New Guinea, says their language was entirely strange to him.

With regard to their dress, the men go absolutely naked, the females wearing only a "fig leaf"; as against this there are in the Berlin Museum head-dresses of pandanus leaves, figured in the "Archiv," Pl. VI, Figs. 19, 20, and there fully described.

Dr. Von Luschan continues, "after studying the foregoing data and examining the thirty-eight specimens in the Berlin Museum, we now arrive at the following conclusions, viz.:

1. That the natives are not Melanesians.
2. That their weapons and other implements are entirely original, and that the resemblance of some few of them to modern Micronesian specimens is merely superficial and external.
3. That in all probability the inhabitants have for many generations held no communication with the outer world.
4. That it has probably taken at least ten generations, viz., at least 300 years, and very likely a vast deal longer, to produce so high a grade of characteristic cultivation in such complete isolation.
5. That with the little knowledge we possess it is impossible to range the *Matty Islanders* in their correct ethnographical position; but it is probable, however, that they are not descendants but brothers of the Micronesians

"Herr Ludwig Kärnbach, the donor of the specimens, speaks," says Dr. Von Luschan, "with much enthusiasm of the workmanship of the Matty Islanders' canoes. No iron or building material of any kind is used in their construction; nothing whatever but wooden nails." Unfortunately no specimen or model was sent home, "but from a sketch they are outriggered, and carry a large spur at bow and stern with an erection fore and aft in each case ornamented with a bunch of hair." Curiously enough he makes no mention of any paddles.

The specimens mentioned and figured by Dr. Von Luschan consist of (1) Pandanus leaf head-dresses; (2) Battle-axes; (3) Long and short weapons edged with sharks' teeth; (4) Spears; (5) Clubs; (6) Four-pronged fishing spears; (7) Bone-bladed hatchets; (8) Wooden bowls and baskets; (9) Coconut scrapers. All of these are represented in the Christy Collection with the exception of the head-dresses and basket, and the collection possesses, in addition, paddles, shell necklaces, armlets of grass, and a few other small items.

Differing from any of these is the "axe" described and figured by Dr. A. B. Meyer¹ sent in 1855, by Von Schierbrand, then resident in Java, to the Historical Museum, and transferred to the Dresden Ethnographical Museum in 1875. This is armed on two sides with four blades of the carapace bone of the turtle fitted into the shafts and fixed with pegs. The shaft is of the wood of the *Canophyllum onophyllum*.

In the Turvey Abbey Collection there is a long spear-like weapon with bifurcated head, the outer edges armed with sharks' teeth. Possibly this specimen may come from Matty Island. [Plate XXIV, No. 13.]

Dr. Meyer says that the inhabitants appear not to be Papuans or pure Melanesians, but of Micronesian origin like the inhabitants of the Anchorite Islands, and thinks that a consideration of the oceanic currents will confirm this.

It is evident from the different woods appearing in various specimens that the island possesses some timber other than coconut trees. It is worthy of notice that with the exception of some slight carved ornamentation on the sharks' teeth weapons, when the natives wish to decorate anything they do it by means of stain rather than by engraving, showing that even if they have engraving tools they make little use of them.

In this island we have almost the only instance of joinery occurring in the whole of the Pacific. The savage generally cuts from the solid. A good instance of this is the copy of a

¹ "Zwei Hauwaffen von Matty, bei Neu Guinea." Von A. B. Meyer. Berlin. 1895.

Windsor chair, now in the British Museum, made by a Zulu. No fish hook of any kind is mentioned by Dr. von Luschan. The specimens, No. 5 figure on Plate XXIV, are I think used for this purpose.

I have shown that specimens from Matty Island do exist in this country, and as far as we know all without history. How and by whom were they obtained?

With regard to the pandanus leaf hats figured by Von Luschan is it certain that these come from Matty Island? There is in the British Museum a woman's cap of similar style and manufacture obtained by Parkinson at Nusa in New Ireland.

The following is a full list as far as I know of types which have reached this country from Matty Island.

Foremost both in finish and importance is the battle axe with long cylindrical shaft of hard reddish or pale brown wood to the upper end of which is fixed in a groove, by means of wooden pegs, a triangular shaped blade of the carapace bone of the turtle [Plate XXII, No. 11]. Dr. Meyer says this weapon is used more to cut the flesh by drawing it inwards than for dealing blows.

Another and almost as effective weapon of warfare is the long staff with the upper end edged with sharks' teeth and covered with a coating of lime. Of this there appear to be two at least different types, the one [Plate XXII, No. 5], in which the shaft is of uniform thickness during its whole length; the other in which that part edged with sharks' teeth has been abruptly thinned off to a spatulate blade. [Plate XXII, No. 4.]

In addition to these there are three specimens which have been in this country for some considerable time without any history, two [Plate XXII, Nos. 6, 10] in the British Museum, and the third [Plate XXII, No. 9] in the collection of the late James Brown. This specimen has been purchased from his executors by Sir A. W. Franks, and presented to the British Museum (Christy Coll.). The butt of the first-mentioned is crescent-shaped of a different wood from the rest of the shaft, and neatly morticed on.

A specimen in my collection has a butt differing in that the points of the crescent are not detached from the sides of the shaft [Plate XXII, No. 8].

Next in importance may be placed knives of similar manufacture and with spatulate blades, edged with sharks' teeth. In this group there appears to be different types. The first [Plate XXII, No. 12], with short circular grip terminating in a conical button, the teeth fixed in a hollow cut to receive

them, and lashed on by fine cord. For this purpose each tooth is perforated, and there is a central row of holes in the blade. The whole is covered with a coating of lime.

In a second type [Plate XXIV, No. 1] the blade is much longer and does not expand to the same degree towards the point, and the teeth are lashed in the same way but fixed in a groove cut the whole length of the blade. The grip is a short and oblong section with rounded corner terminating in a conoidal butt.

A third type [Plate XXIV, No. 2] has a blade with parallel sides with square shoulders and edged with much smaller teeth, fixed in a groove and lashed as in the other types. The grip is long and oblong sections with rounded edges with raised band near blade, and higher up the grip the butt terminates in a crescent. The whole blade is covered with lime.

No specimen has reached us exactly similar to the one figured by Dr. von Luschan, Taf. VI, p. 11, with the cleft between the teeth.

In each case these specimens were encased in a sheath of pith divided down the centre into two pieces and kept in position by a cord fastened at one end to the grip.

An important class of weapons, one of which was in the British Museum, but in the Solomon Island section, is represented by long clubs, the heads terminating in conical knobs, the section of the shaft differing somewhat in each type as shown in the accompanying illustrations. [Plate XXIII, Nos. 4-6.]

The shafts of these clubs have in several cases a painted design upon them.

Their javelins are all more or less alike, differing only in number and position of barbs. *Firstly*, entirely plain without a barb of any kind [Plate XXIII, No. 12.] *Secondly*, barbed on one side only with the lowest barb turned upwards [Plate XXIII, No. 2.] *Thirdly*, similar to the last but with one single barb at point on the other side [Plate XXIII, Nos. 1, 11.] *Fourthly*, those barbed on both sides, with the two bottom ones turned upwards [Plate XXIII, No. 7.] Among specimens of this type are some where the two last pairs of barbs, facing one another, have ceased to be divided at the points (Plate XXIII, No. 8), and others where they are only indicated by means of scratches on the shaft.

In addition to these javelins are small darts with flat barbs on one side only (Plate XXIII, No. 2). This class of weapon appears to be made of hard wood, but in all cases smeared over with a dirty brown material of an earthy nature.

There were in the British Museum two specimens of this class of weapon, but without any history.

Four-pronged spears, probably for fishing, with points variously barbed. These again are divided into two distinct types, those in which the prongs are neatly morticed into the head of the shaft [Plate XXIII, Nos. 9, 10] and those in which shaft and prongs are cut from the solid [Plate XXIII, No. 3]. In the former case the points are bound together, a short distance above where they spring from the shaft, by fine string, to keep them from spreading on striking the object aimed at.

Hatchets with blades of turtle bone, neatly fitted to the handle by means of slots, grooves, and pegs [Plate XXIV, Nos. 9, 10].

There are in the British Museum two hatchets of somewhat similar materials, but with the blades set at right angles to the shaft, and, fitting into a groove in the handle, are lashed on by sinnet. One collected by Brenchley at Nukulaelae in the Ellice group, and the other a Cook specimen labelled "a small hatchet from the Friendly Islands." Other specimens coming from the Gilbert Islands are figured in the Album, 2nd series, Plate 94, and in the University Museum at Glasgow is a specimen labelled "Savage Islands," on the authority of the Rev. George Turner.

Dr. Von Luschan says that it is Kärnbach's opinion that these hatchets are used for canoe building, and this seems the more likely, as up to the present no stone implement has reached this country, nor does Von Luschan make mention of any; the peculiar curve of the blades would be of advantage in working the rounded sides of a canoe.

Utensils.—Bowls of pale coloured wood, used evidently for food. They are either round or slightly oval in form, smaller at the bottom than at the top, projecting from two opposite sides at the extreme top edge are two knobs, evidently to prevent the bowl slipping through the hands; from each of these a slight ridge extends to the bottom edge.

Shallow dishes, oblong in form, with a curved bottom, the sides being at right angles. This type resembles somewhat our old cheese dishes, and is probably from its appearance also used for food.

The manufacture of string is thoroughly well understood, and that which appears on the different specimens is of the neatest description.

I have in my collection a specimen of whip cord of the very finest manufacture, consisting of a centre piece of fibre round which is wrapped very neatly some vegetable fibre; it takes a strong glass to see how it is made [Plate XXIV, No. 5]. This was wrapped round a piece of pith similar to that used for sheaths to the sharks' teeth knives, and in it were inserted

several minute sharp pointed fish spines, evidently used as line and gorges for fishing.

Last but not least important come the cocoanut scrapers [Plate XXIV, Nos. 7, 8]. They somewhat resemble in form beaters used by workmen in laying turf, being an oblong block of wood, having at one end a rod, cut from the solid, rising at an obtuse angle; the end of this rod is armed with a mussel shell, and below it is a band or ring formed from a section of a diminutive cocoanut. It is evident that the person using this sits astride it, and it is very improbable that the heavy base could be used to press out the oil from the shredded nut, as described by Kärnbach. He says, "The natives showed us the method of using these implements. The grated cocoanut is placed on a strong deeply indented block, which is fastened to the broad end of the beater with wooden clamps. A man then stands upon the broad end, and rocks himself up and down. A certain amount of oil was produced, but not much." If this description is right, it seems a pity that he should not have sent home a complete implement, as certainly there is no mention of any block or clamps by Dr. Von Luschan, and the specimens in the British Museum show no signs of any having been used in the manner described. Dr. Meyer in speaking of these scrapers says that Herr B. Geisler, of the Dresden Museum, thinks that the flat wooden part cannot be for expressing oil, as the pressure thus exerted would not be sufficient; but used more probably for sitting on, and that he has seen similar specimens in Ceylon, Java, and the Bismarck Archipelago.

Freycinet (vol. ii, pp. 318-447) describes a somewhat similar implement from the Ladrone Islands, which he calls a "kamdjoo," and figures it in his Atlas, Plate 79, Fig. 2. This specimen has a turtle shell point. There is in the British Museum a specimen, but with an iron point, from Perak called "*kukor*" by the Malays, and used in preparing Santan." Wawn in his "South Sea Islanders," p. 221, figures another in use in the New Hebrides, and Dr. Von Luschan mentions that the Swahili of East Africa use a similar implement called *mbusi*.

There are two types of paddles, the one with the blade morticed on in the same neat way as the points of the fish spear [Plate XXIII, Nos. 14, 15], and the other with blade and shaft cut from the solid. Those of the latter kind are of rather a larger and rougher make [Plate XXIII, No. 13]. Both types have pointed blades with square cut shoulders, and stout cylindrical shafts. They are of brown or pale coloured but hard wood.

The only personal ornaments that we at present know are flat grass arm bands, and necklaces of shell; the former have an ornamental covering of plaited grass, with various designs in

PLAN OF BURBUNG GROUND
Parish of Wullamgambone
County of Gregory

Diagram 1-Scale 160 Yards to an Inch

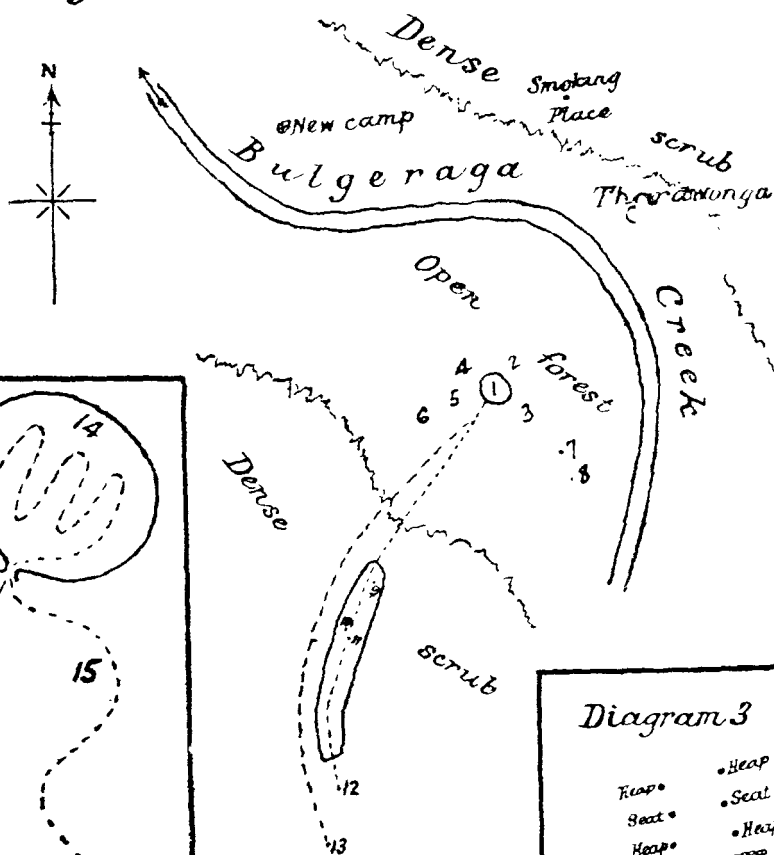


Diagram 3

Heap • • Heap
 Seat • • Seat
 Heap • • Heap
~~Bought Screen~~

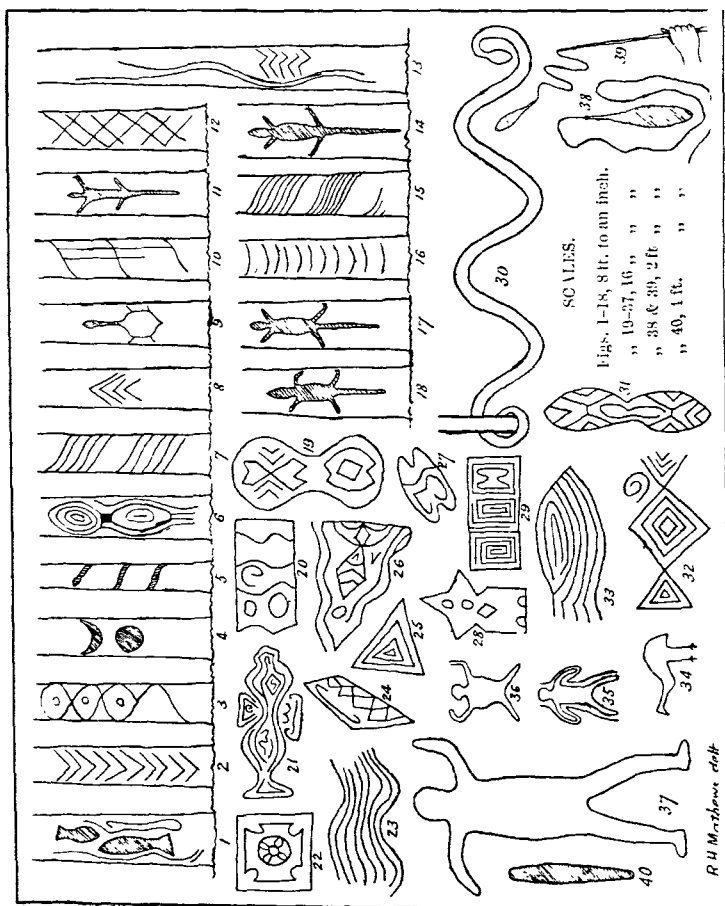
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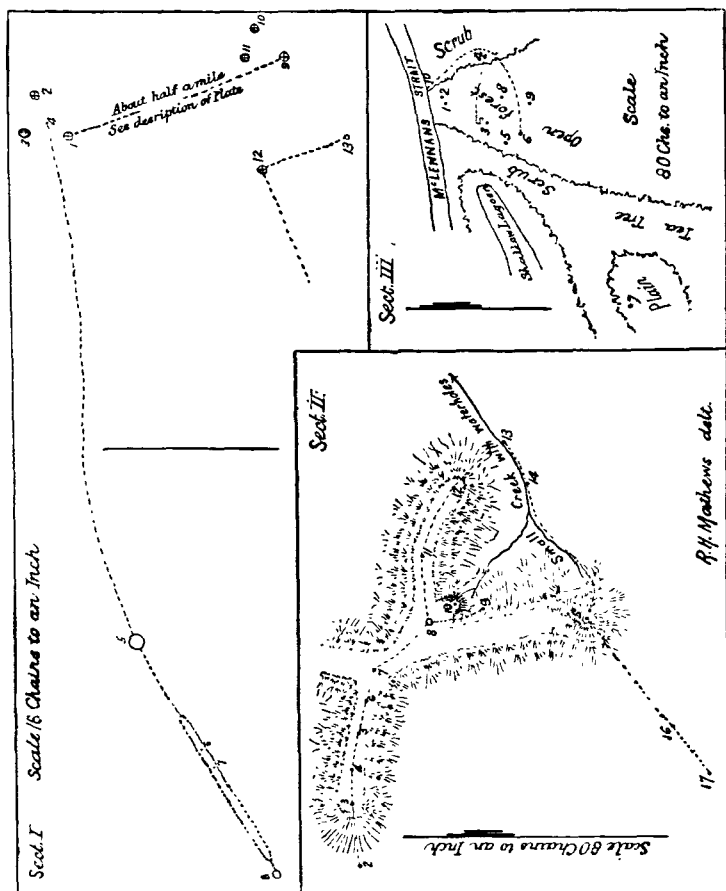
$$32 \text{ yds.} = 1 \text{ in.}$$

Diagram 2

Scale: 80 ft = 1 inch

R. H. Mathews delt.





black. [Plate XXII, No. 1.] Several of these were received wrapped in a grass covering as if used for trade.

The necklaces consist of long pieces of bright orange-coloured shell, ground down from the outer lip of the *Cassis cornuta*, and alternating with small fish vertebrae, the whole threaded on the fine string found on other specimens from this island. [Plate XXII, No. 2.]

Now that more light is being thrown on these interesting people, it is to be hoped that further specimens may be found in either museums or private collections, and that while there is yet time some one either in Australia or New Guinea will be able to glean from the islanders themselves an account of their antecedents, so that at no very distant date ethnologists will be able to determine with some degree of certainty their origin and history.

The BŪRBŪNG of the WIRADTHURI TRIBES.

By R. H. MATHEWS, L.S.

[WITH PLATES XXV-XXVII.]

THE tribes who attended the Būrbūng described in this paper were some of those belonging to the Wiradthuri community, which in former times was both numerous and important, occupying a wide tract of country in the interior of New South Wales, extending from somewhere about the Murray River northerly nearly to the Barwan river, where they were joined by the great Kamilaroi tribes. In a paper contributed by me to the Royal Geographical Society of Australasia, I have dealt with the wide geographical range of the social organisation common to these two powerful communities, and also with the variations in their class systems¹; and in the "Journal of the Anthropological Institute of Great Britain," vol. xxiv, pp. 411-427, I have described the Bora, or initiation ceremonies of the Kamilaroi tribes. The Būrbūng is the name of the equivalent ceremonies among the tribes of the Wiradthuri community, a detailed account of which forms the subject of this paper. As this is the first description of the Burbung ever published, it is hoped that it may prove of interest to anthropologists and others studying the customs of the Australian races.

In March, 1893, the remnants of the native tribes particularized in subsequent pages, in answer to a summons from the headman of the Macquarie river tribe, commenced to assemble on the Bulgeraga Creek, for the purpose of holding a Burbung

¹ "The Kamilaroi Class System of the Australian Aborigines," "Proc. Roy. Geog. Soc. Aust.," Q. Beh., X., pp. 18-34, Plate I.

at which a number of boys were to be initiated. It was the end of May before the most distant tribes arrived at the main camp, and the final ceremonies were not concluded till the beginning of July. I did not hear of this gathering in time to be present at it; and for some time afterwards, owing to heavy rains, the rivers in that part of the country were in a state of flood, rendering travelling almost impossible. I had therefore to wait till the country was dry enough, and the rivers fordable, before attempting to visit the locality. This had to be accomplished by means of a long and expensive journey of 327 miles by railway, 78 miles by stage coach, and 22 miles on horseback—427 miles in all. On arriving there, I found the headman of the Macquarie tribe, "Big Jimmy," who is locally known among the white people as the "King," and some old men, besides other tribesmen, women and children, to the number of between twenty-five and thirty persons, camped on Bulgeraga Creek, about two miles lower down than the spot where the Burbung was held. I requested the headman to accompany me to the shade of a tree a short distance from the camp, where we sat down together, and I explained to him the object of my visit. I thought it advisable to let him know that I was acquainted with the Kamilaroi initiation ceremonies, and therefore I detailed some of the most secret parts of them. On seeing that I possessed this knowledge, he threw off all reticence, and entered into the subject without reserve. He called some of the old men to him where we were sitting, and after some further conversation it was arranged that they would endeavour to show me everything. All the natives at this camp spoke fairly good English, having often been employed by the white people on sheep and cattle stations from their youth. Before going amongst them I took the precaution to ask the owner of the run on which they were camped, who knows them all individually, to tell me the names of the natives who were the most truthful and reliable.

I had a tent and camped with these people for several days until I collected all the particulars I required. Accompanied by the "King," and one of the men who had discharged the duty of guardian to one of the boys who had been initiated, I visited the site of the Burbung camp, the sacred ground, and all the places in the bush where the novices were taken during the time they were out with the old men. While standing at these places I asked my guides to explain every detail exactly as it took place. While they were doing this I made copious notes, and also asked such further questions as appeared necessary. In consequence of the numerous particulars to be taken down at each of the various stages of the ceremonies, it is not improbable that omissions have been made, and some errors of detail have

crept in, but I have, I feel sure, succeeded in obtaining a reliable and fairly complete account of what took place. I have abridged the details as much as I considered advisable, in order to keep this memoir within reasonable limits; the most important parts of the ceremonies will be described in a more extended form in a supplementary paper.

At night during my stay in the camp at Bulgeraga, I got one of the men who had acted as a messenger in gathering the tribes, to give me a detailed account of his procedure from the time he left the camp until his return with the contingent to whom he had been sent. An old man, who appeared to be a doctor or wizard (*wooringimba*).¹ told me a number of their principal traditions and legends, which I may reproduce on a future occasion. One of them is, however, so intimately connected with the ceremony I am describing, that I must include it in this paper. It is as follows:—A long time ago there was a gigantic and powerful being, something between a blackfellow and a spirit, called Dhuramoolan, who was one of Baimai's people. His voice was awe-inspiring and resembled the rumbling of distant thunder. At a certain age the boys of the tribes were handed over to Dhuramoolan, in order that he might take them away into the bush, and instruct them in all the laws, traditions and customs of the community, to qualify them to sit in the councils, and discharge all the duties and obligations devolving upon them as tribesmen. When he brought them back to the camp, it was always observed that each boy had lost one of his upper incisor teeth, as a visible sign that they had been initiated by Dhuramoolan. He pretended to Baiamai that he always killed the boys, cut them up, and burnt them to ashes, that then he formed the ashes into human shape, and restored them to life, new beings, but each with a tooth missing.² On each occasion when Dhuramoolan brought back the boys who had been handed over to him for the purpose of initiation, it was found that some of them were missing, and he always reported that they had died from some ordinary disease. After a time Baiamai became very uneasy at the loss of so many of his young men, and suspecting that something was wrong, he questioned those brought back, but they were too much afraid of Dhuramoolan to tell upon him. On Baiamai compelling them to speak the truth, they told him that Dhuramoolan had feasted on their fellows. They also stated that it was not true about Dhuramoolan burning them and restoring them to life, and that the

¹ *Woor'-in-gim'-ba* (the *g* hard).

² In some tribes this part of the story is varied by stating that Dhuramoolan swallowed the boy, and after a time vomited him up again a young man, possessing all the tribal knowledge, but *minus* a tooth.

extraction of their teeth was performed by his inserting his own lower incisors under the tooth to be extracted, and wrenching it out. At this part of the performance he sometimes bit the entire face off the boy and devoured him. Upon hearing this Baiamai became very angry and destroyed Dhuramoolan, but put his voice into all the trees of the forest and told it to remain in these trees for ever. He then split one of the trees, and made a bull-roarer (*mudthega*) which he fastened to a string and swung round, and it had Dhuramoolan's voice. It could be made out of any tree, because the voice of Dhuramoolan had been put into them all. Baiamai then told his chief men that for the future they must themselves initiate the youths of the tribes, using the *mudthega* (Plate XXVI, Fig. 38) to represent the voice of Dhuramoolan to which they had all been accustomed. Baiamai thought it would be better not to communicate Dhuramoolan's imposition to the women and uninitiated, but to continue to make them believe that he came and took the boys away and burnt and resurrected them as heretofore. He then instituted the ceremonies of the Burbung as it is at present practised, and commanded them to teach it to their sons in order that it might be perpetuated among all the tribes.

Dhuramoolan had a wife named Moonibear who watched over all matters relating to the women of the tribes. At the ceremony of the Burbung, a small bull-roarer, bearing her name, is used in the sacred ground, and is heard at night by the women in the camp, who know its peculiar sound. It has a short string and is fastened to a handle. Plate XXVI, Fig. 39. The large bull-roarer, Plate XXVI, Fig. 38, is known by the several names of *mudthega*, *booboo*, and *dhuramoolan*. It is attached to a long string, and is swung round the head without a handle.

The Camp.—The general encampment was on the left or west bank of Bulgeraga Creek, an ana-branch of the Macquarie River, about a quarter of a mile easterly from Portion No. 11 of 111½ acres, in the parish of Wullamgambone, county of Gregory, New South Wales. The site selected was on some dry level ground in a small patch of open forest, in close proximity to the creek mentioned, from which water was obtained for camp use. This camp consisted of five divisions representing the remnants of the tribes from the following rivers:—the Macquarie, the Castle-reagh, the Bogan, the Barwan, and the tribe from Cobar. Each tribe occupied that side of the main camp which faced the direction of their own country, the camp of the headman who called them together being the datum point. Plate XXV, Figs. 1 to 6. The total number of persons, including a few half-castes, present at this gathering was ninety-eight, viz., sixty-four males, and thirty-four females, these numbers in-

cluding children of both sexes. The Aborigines Protection Board supplied them all with rations during the continuance of the ceremonies. The Cobar tribe had to travel about 120 miles, and one section of the Macquarie tribe about 100 miles to reach the Burbung camp.

The Burbung Ground.—In the central part of the camp, and about 150 yards from the Bulgeraga Creek, was a slightly oval space, measuring in one direction 86 feet, and in the other 77 feet. It was intended to be a circle, but this was as near as the natives could describe its outline. This space was bounded by a small nick or groove¹ cut in the soil about 4 inches wide and 3 inches deep, and from its surface all timber and grass had been thoroughly cleared. In the centre stood a pole, about 8 feet high, with bushes and emu's feathers fastened to the top. On the south-western side of this "circle," as I shall call it for convenience of reference, an opening 4 feet wide had been left, from which ran an uncleared bush track bearing generally about S.S. Westerly, but winding from side to side, for about 368 yards. At the distance of about 150 yards this track entered a thick scrub of belar, sandal-wood, and other brush timber, and 25 yards farther on the carvings in the soil and on the trees commenced. The most interesting of these are shown in Plate XXVI, Figs. 1 to 37. The first object was a hole in the ground, on the left of the track, about 3 feet by 18 inches, and about 18 inches deep, representing a *war'rabun*, or place in which a young woman has to sit during her first menstrual flow. Seven yards farther on the same side, was a figure of Gunnanbully, wife of Baiamai, 5 feet 6 inches long, and 2 feet 6 inches across the breast, outlined by a groove cut in the soil, about 2 inches deep, and from 2 to 3 inches wide. Plate XXVI, Fig. 36.

On the opposite side of the track, 24 yards further on, was the figure of an emu,² 6 feet 7 inches from the point of the bill to the tail, cut out in the soil in a similar manner, and near it were several emu tracks, as well as gigantic tracks of a man. Fig. 34.

Six yards farther, on the left of the track, was a representation of a bower-bird's "play-house," formed on the ground,

¹ This is the only instance where I have seen the boundary of the circle defined by a nick cut in the ground; it is generally formed by a raised embankment, composed of loose earth. See my paper on "The Bora, or Initiation Ceremonies of the Kamilaroi Tribe," "Journ. Anthropol. Inst.," xxiv, p. 414.

² See "Rock Paintings and Carvings of the Australian Aborigines" in the "Journal of the Anthropological Institute," vol. xiv, p. 161, 162, Plate XVI, Figs. 4 and 5, where I have shown two emus carved upon rocks.

near the base of a belar tree, among some grass and salt-bush, with small bones, pieces of broken crockery, glass, &c., in it.¹

Fourteen yards from this, on the same side of the track, was a belar tree from which two spiral strips of bark about 1½ inches wide, and reaching 12 feet high, had been cut with the tomahawk to represent a tree struck by lightning. Alongside the long strips were five zigzag lines indicating the forked lightning. See Plate XXVI, Fig. 13.

In the middle of the track, 233 yards from the circle before described, was a large fire called "Baiaimai's Fire," (*mill'endee*), which was kept constantly burning. (Plate XXV, No. 11.)

Opposite this fire, on the right hand side of the track, and lying parallel to it, was the horizontal figure of a man, composed entirely of earth heaped up, the feet being towards the circle. The length was 21 feet 8 inches, the width across the body 5 feet 6 inches, and the height of the body above the ground 1 foot 9 inches at the highest part, Fig. 37. He was lying face downwards, with his arms spread out, and close to him were imprints of a gigantic hand in the soil. These were formed by puddling the clay into the consistency of plaster, and then making an impression in it resembling a human hand three or four times life size. They were stated to be the imprint of Baiaimai's hands, when he was falling.

Some of the blacks told me that Baiaimai was hidden in a tree, surrounded by bushes, according to the native custom, waiting near a waterhole for the emu to come and drink. He then speared it with his long spear, *mun'nian*,² and it ran away some distance before it fell. Baiaimai ran after it, and tripped over a log and fell in the position delineated on the ground. In one of the belar trees near the figure of the emu before described were fastened a bunch of bushes, called *wom'merawa'*, representing the place where Baiaimai was concealed in the tree when he threw the spear.

Three and a half yards from Baiaimai's head was a belar tree, containing an imitation of an eagle-hawk's nest, about 22 feet from the ground. On the stem or bole of this tree was a representation of the sun, 12 inches in diameter, made by removing all the bark within the outline. Close above it was a figure of the moon formed in the same way, about four days old, measuring 16 inches between the horns.³ Both these figures were visible to anyone walking along the track. Fig. 4.

¹ Such places are used only as "play-houses," as they are called by bushmen; the bird builds its nest for breeding purposes in a tree.

² A long heavy spear, made on purpose for killing emus.

³ In my paper on "Aboriginal Rock Paintings and Carvings in N.S.W." published in the "Proceedings of the Royal Society of Victoria," vii, N.S., pp.

Extending from the foot of the tree containing the eagle's nest, in the direction of the *goombo*, described farther on, was a representation of the *wahwee*, a fabulous monster resembling a snake. It lived in a large water hole, and used to kill and eat some of Baiamai's people. They were unable to kill it. This carving in the soil was 59 feet long, and 12 inches wide across the body. Its tail was represented twisted round a belar sapling. Fig. 30.

On the opposite, or left hand side of the track, was the figure of a man, 6 feet 6 inches high, cut out in the soil. The body was long in proportion to the rest of the figure, like many native paintings which I have seen in caves, and in carvings upon rocks.¹ This my informant said was one of Baiamai's sons, but he had forgotten his name. Fig. 35.

One hundred and twenty yards beyond Baiamai's fire, the *goombo* is reached. This is a cleared space, in which are built up four circular mounds of earth about 2 feet high, having a basal diameter of about 3 feet, and 15 inches across the top. These four heaps or mounds formed a square, the sides of which varied from 30 to 33 feet, two of the sides being approximately at right angles to the track which passed through the *goombo*. Several native weapons such as boomerangs, nulla-nullas, bundies, hielamans, &c., were stuck in the sides of these mounds by way of decoration. On each side of the track, about midway between the two outer heaps, was a rustic seat, formed by digging up a sapling by the roots, and chopping the upper part of the stem off and inserting it in the ground with the roots upward. These seats (*woongoweera*) were about 2 feet high, and were stained with human blood in the following manner. A number of men wounded their gums, or the flesh under their tongues, by means of sharp pointed pieces of bone, or steel needles got from the white people, and as the blood flowed into the mouths of the operators, they spat it out upon the wood of the seat, where it was allowed to soak in and dry. It is not necessary that the seat should be made scarlet, it is enough if it is stained over with blood. The natives told me that the *goombo* was used for playing native games, and for various spectacular displays, both during the day and in the night—a fire being kept alight on the northern side of it to give light on these occasions. Plate XXV, Fig. 12, and Diagram 3.

Four yards beyond the *goombo*, a number of bushes were laid

143-156, Plate VIII, Fig. 5, will be found paintings of the sun and moon on the roof of a cave.

¹ Compare with Fig. 2, Plate II, and Figs. 1 and 16, Plate III, "Proc. Roy. Geog. Soc. Aust.," x, pp. 46-70, illustrating my paper on "The Aboriginal Rock Pictures of Australia."

as a fence or screen, about 5 yards long and 4 feet high. This was at the termination of the track and at right angles to it. Behind this screen of boughs a number of natives used to hide on the arrival of a new contingent as described at p. 306.

In the preceding description I have dealt with most of the principal objects in the order in which they occur to a spectator starting from the large circle and going through the whole length of this sylvan temple. A reference to Plate XXVI will further assist the reader in understanding what I have said. I will now endeavour to describe the remainder of the carvings in the soil, and the marked trees, as well as other objects scattered throughout the sacred ground.

The great number of characters (*yam'munyamun'*)¹ cut upon the surface of the ground at once attracts the notice of the visitor. To obtain an even space to work upon, all small sticks, grass, and loose earth had been scraped off the surface and piled into little heaps around the butts of the trees and saplings, and the earth cut out in carving the outlines was similarly disposed of. There were upwards of thirty of these designs, some being on one side of the track and some on the other, and extending back from it about 10 or 15 feet. The first of these carvings were met with at 182 yards from the circle, and they then continued at irregular intervals for 138 yards in the direction of the *goombo*. Some of these designs were as much as 14 feet long and 8 feet wide, and the smallest about 6 feet by 3 feet. A few of the most representative of these are shown in Plate XXVI, Figs. 19 to 33.

Scattered throughout the distance of 138 yards mentioned in last paragraph, I counted fifty-nine trees marked with the tomahawk, some being on each side of the pathway. Most of them were merely stripes, straight or spiral, of a very simple design, but some were of the usual *yam'munyamun'* pattern. A few of these are reproduced in Plate XXVI, Figs. 1 to 18. I have also shown some representations of iguanas, fish, a snake, a turtle, and the sun and moon mentioned elsewhere. All these markings were cut through the bark as far as the wood; and within the outlines of the animals named the whole of the bark had been removed. Several of these markings were on saplings, or small scrub trees, and in such case the tops were lopped off at about 7 or 8 feet from the ground. The larger trees containing the best of the markings were not lopped. It was winter time when the Būrbūng was held, and as the scrub was very dense, the saplings may have been lopped to admit more sunshine.

Dispersed along the path, some being on one side and some on

¹ This is a word used by the Kamilaroi and Wiradthuri tribes to designate the figures and devices on the ground and on the trees.

the other, were between two and three dozen representations of birds' nests, fastened to saplings, and to the lopped off scrub-trees above referred to.

Around that part of the sacred ground containing Baiamai and the other figures, and the *yammunyamun* cut in the ground, a bush fence, formed of sapling forks and bushes, had been made by the natives for the purpose of keeping off cattle and sheep, which were running in the vicinity. From the time the preparation of the ground was commenced until the final ceremony held there, two of the able-bodied men kept guard over it day and night, in order to prevent women or the uninitiated from seeing it. They camped at Baiamai's fire, and kept dogs to assist them. All the tribes contributed men to take their turn at this duty.

Among these tribes, it is the custom for that section of the community which called them together, to prepare the ground and get everything ready for the arrival of the various contingents. The locality chosen for the performance of this sacred rite is also situated in the country of the headman who calls the assembly.¹

Mustering the Tribes.—Early in the year 1893 the headman of the native tribe occupying what is called "The Mole" country, on the Macquarie River, after consultation with the headmen of the Castlereagh and Bogan river tribes, decided upon holding a Bûrbûng on the Bulgeraga Creek, one of the ana branches of the Macquarie River. Accordingly he sent five messengers to invite the neighbouring tribes who were to participate in the ceremonies. Two of these were sent to the Castlereagh River to muster the sections of that tribe at Coonamble and Galargambone; two were sent to the Bogan river tribe, one of whom went to Cannonba, and the other to Nyngan; and one messenger was sent down the Barwan River to Walgett and other places. Each of these messengers carried a bag containing a bull-roarer wrapped in a piece of skin, and one or more kilts, according to the number of headmen to whom the message was sent. The messengers thus dispatched were of the same class as the headman of the Mole tribe, and were sent to men of the same class in the tribes they were directed to muster.

These messengers generally arrived at the camp to which they were dispatched a little before sundown, because at that time of the day all the men have generally returned from hunting, and are to be found in their own quarters. If the messenger got within a few miles of the place the previous

¹ "The Bora, or Initiation Ceremonies of the Kamilaroi Tribe," "Journ. Anthropol. Inst.," xxiv, p. 413.

evening, but was unable to reach it, then he would camp there for the night, and early the following morning he would travel on, so as to reach his destination before the men had gone away for the day. On his arrival, he sat down a short distance from the camp of the men, within view of them, and on their observing him, one of their number, knowing that he was a messenger, would go over to him, and inquire the nature of his errand. On his stating that he had brought an invitation to attend a Bûrbûng, the man who had spoken to him would communicate this to the headman and elders of the tribe, who all went to where the messenger was sitting. He then stated from whom he had come, and exhibited to them the bull-roarer and the kilt, and delivered all the particulars of his message. The headman took charge of these emblems of his mission, and consulted with the elders who were around him as to whether they were all willing to join in the great gathering. The natives are generally very glad to receive such a message, and are bound to obey the call. On this meeting or council of the old men accepting the invitation, their decision was made known to all the men, who chanted "Birr! Birr! Wah!" and beat the ground with their feet. When the women heard this noise at the men's camp, they knew that a message had been received to attend a Bûrbûng, and they were glad of it, because any of them who had sons of a suitable age would have them made "young men." The men went towards the women's camp, and were met by them. The latter then pulled handfuls of grass, and laid them on the ground, forming a ring into which they invited the men to enter and dance, the women standing round, and beating time with their hands. In a short time they all dispersed, the messenger going into the single men's camp, where he was hospitably treated. In all native camps, the young men, and all visitors who have not their wives with them, always camp together a short distance from the camp of the married people and girls.

The next day, or it might be in a few days' time, the message was sent forward to the next tribe, or section of a tribe, either by the headman dispatching one of his own people bearing the sacred emblems, or by the same messenger who had brought the invitation to the camp. In this way the message was sent from tribe to tribe, or to sections of a tribe, until the farthest-off camp of natives was reached. The messenger then remained with the latter until it was thought time to start for the place of assembly. The journey to the appointed place was performed by easy stages on account of the women, children and aged people having to accompany the men. The route taken by the messenger

on his way out was again followed, in order to pick up other detachments who had been invited. When the most distant tribe or group started for the Būrbūng, in company with the messenger, some of the active men went to and fro between them, and the next group on ahead, reporting the progress made by the women, &c., so that they might know the time to expect the travellers, and to be ready to join them. The two lots of natives would then travel in company, notice being again sent on ahead to the next camp, reporting progress, as in the previous case, their numbers being increased by a fresh contingent at each of the places along their course. When this mixed concourse camped at night, they sometimes had dances and songs at the camp fire.

On nearing the Būrbūng camp, which was usually in the afternoon, one of the men went ahead and reported to the principal headman that the combined contingent would shortly arrive. On the approach of the strangers the men already assembled at the general camp stood round inside the circle, each man having two boomerangs, a boomerang and a throwing stick, or the like, which they beat together. The headmen stood among the rest at the side of the ring opposite to that in which the opening is left. (Plate XXV, No. 14.) The new arrivals then marched on, in single file, in a serpentine line, each man being painted with red ochre and grease, and carrying a small bough in each hand—the left hand holding the end of a spear in addition to the bough—the other end of the spear pointing upwards over his left shoulder. The hands were brought together, shaking the boughs at each step. The bull-roarer, which was brought to the tribe by the messenger, was carried by the leader of the band. It is carefully wrapped in a skin, and is lashed to the lower end of his spear. From the upper end of the spear is suspended the kilt which accompanied the bull-roarer. The leader, followed by the others, entered in single file into the circle through the opening in its boundary, and marched backwards and forwards across the circle, commencing at one end and going in zigzag lines to the other end. (Plate XXV, Diagram 2.) They then stopped marching, and commenced jumping and shouting, their hosts standing around beating their boomerangs together. When this had lasted for several minutes the headmen gave the order to break up, when all the men—the hosts and their guests—mixed together, and they all danced round the circle a few times. The headmen of the hosts, and also of the new arrivals, then called out the names of a few principal camping grounds, waterholes, or other remarkable places in their respective districts. While this reception was being accorded to the men the women, accompanied by the

boys and children, went into the camping-ground and disencumbered themselves of their burdens, and set to work pitching their gunyahs.

The men of the newly-arrived contingent were next taken¹ along the track to the sacred ground, and shown the figure of Baiamai, the *millendee*, and the *yammunyamun* on the ground, and on the trees, before each of which they stopped and danced. They then went on towards the four heaps of earth (*goombo*). Behind the screen of boughs at the further end of these heaps (Plate XXV, Diagram 3) about a dozen men were concealed, in a stooping posture, having a small bough in each hand, the bush in one hand pointing upwards, whilst that in the other pointed downwards, and the hands were held close together. The headmen of the tribes previously arrived are there standing on the heaps, or sitting on the seats. If there were more headmen than these could accommodate, they stood in the open space between them. All the headmen had their faces in the direction from which the strangers approached. The latter, led by their headman, then formed into line before the goombo. The men concealed behind the bough screen then rose and danced out in single file, holding the bushes in their hands—waving them slightly up and down in unison with their steps—and mixed with the new arrivals amidst much glee and merriment on both sides. The bushes were then cast away, and all the men danced round outside the goombo at intervals, as long as the performance lasted. The headmen in possession of the heaps changed places, getting off one and walking to the other, and the newly-arrived headmen had an opportunity of running in and standing on them in his turn. Some of the headmen stood or sat on the wooden seats (*woongoveera*).

At the circle near the camp that night the Mole tribe, in whose country the assemblage took place, painted themselves, and danced a corroboree before the newly-arrived contingent, the women beating time on little bags made of the skin of the padamelon, or any similar animal, tightly filled with pieces of skin, grass, &c., like small pillows. One of these pillows served two women sitting opposite each other and striking it alternately. These festivities would be kept up till 10 or 11 o'clock, and sometimes later, when all hands would retire to their own quarters. It generally happens that the new arrivals have relatives or acquaintances among the other tribes. These search for each other as soon as the tribal formalities are over, and chat round the camp fire long into the night.

The procedure I have described will apply to each of the

¹ If it is too late by the time the reception at the ring is over, this part of it is postponed till the next morning.

contingents, the way the messenger was sent to them, their journey to the Burbung ground, and their reception there.

Preliminary Ceremonies.—From the time of the arrival of the first contingent until the final ceremony there was a preliminary performance at the circle every day. About 4 o'clock in the afternoon all the men and women, accompanied by the boys who were waiting to be initiated, assembled at the circle. The women and boys took up their position round the boundary of it, the relatives of the boys being in the front row. The men, all of them painted and wearing their regalia, then entered the circle and danced round in single file. As they tramped round waving their arms, the women threw handfuls of leaves at them as they passed. When this was concluded, the women and novices dispersed to their quarters in the camp, and all the initiated men went away along the path to the sacred ground, and amused themselves by various performances around Baiamai's fire (*millendee*), and at the four heaps of earth (*goombo*) before described. The headmen and others played games of dancing from heap to heap and seat to seat, laughing and joking with each other the while. Between the goombo and millendee various sports and ceremonies are carried on. Sometimes the men imitate a lot of dogs running after each other, then a mob of kangaroos, then an emu hunt, &c. The wizards go through various mummeries, pretending to swallow things and bring them up again. The young men who have only been at one Būrbūng previously are shown all the devices, and everything on the sacred ground is fully explained to them, so that they may be able to reproduce them themselves when they are required to do so at future ceremonies.

As before stated, the Mole tribe, being the principal hosts, made a corroboree on the night of the arrival of each tribe. After that, however, each tribe danced corroborees in succession, following the order of their arrival. Thus, if A, B and C are three tribes who have arrived in that order, and D is the tribe acting as host. On the night of the arrival of each of the tribes D dances; the next night A dances; the next night B, and the next C, this series being repeated as long as the Burbung lasts.

Principal Ceremony.—A few days after the arrival of the last contingent—or, if time is no object, it may be two or three weeks, all the visitors wishing to have a fair share of the festivities—the final ceremony at the circle is gone through, the time for this being fixed by the headmen after discussion among themselves. In the Burbung I am describing, the night previous to this, the *mūdthega* and *mūnibear* were vigorously sounded at the sacred ground, and were heard by the women,

novices and children at the camp. The women were then informed that Dhuramoolan was coming for the boys the following morning. Shortly before daylight the men, women and children assembled within the circle, having entered it through the opening in its boundary, each tribe keeping by themselves on that side of the circle nearest their own district, each group having a small fire to keep themselves warm, because the morning was cold. The novices, who were naked, were placed sitting down on pieces of bark laid on the ground near the back part of the circle, and their eyes cast upon the earth at their feet. Each boy's sister sat behind him, and near her was her husband, who acted as the boy's guardian throughout the ceremonies. These two then painted him all over with red ochre and grease, making a few marks of pipe-clay on the chest, and putting soft swan feathers in his hair. Each boy was then invested with a girdle, to which was attached four kilts, one in front, one at each side, and one behind. Two forehead bands, a wide and a narrow one, completed the dress.

When all was ready the headman sang out "Lie down! here he comes!" (meaning Dhuramoolan). The women and children then lay down, and were securely covered up with blankets and bushes, and a few of the men were appointed to watch them. A blanket was also thrown over the head of each of the novices in such a way that he could only see the ground at his feet. Immediately this was done a number of men approached from the direction of the sacred ground, some sounding bull-roarers, others with strips of bark about 2 feet 6 inches long and 4 or 5 inches wide (Plate XXVI, Fig. 40) in each hand, with which they beat the ground alternately at each step. They tramped round and round inside the circle three or four times, beating the ground, some men outside sounding bull-roarers, and together making a terrific din. Some of the men took up lighted sticks from the fire and threw them near the women and children, where they were covered up, to make them believe Dhuramoolan had tried to burn them. While this frightsome row was going on the guardians caught each his novice above the elbow, and led him noiselessly away along the pathway towards the sacred ground, the men with the bull-roarers following, and the other men shouting as before, for a short distance. As soon as the novices and others who accompanied them were out of sight in the scrub, the covering was taken off the women and children. They looked up, half terrified, and seeing the burning sticks lying near them, were told that Dhuramoolan had done this to try and burn them when he was taking the boys away. The women, and the men who were guarding them, then left the

circle and removed the camp about 300 yards down the Bulgeraga Creek, and on the opposite side of it, where there was some high, dry ground suitable for the purpose.

In the meantime, the novices had been taken to a place 48 yards S. 10° W. from the goombo (Plate XXV, No. 13), and were placed sitting in a row on sheets of bark laid upon the ground, the blankets being still kept over their heads and shoulders, and one or two men sounding bull-roarers occasionally a short distance off. On their way here, the novices were not taken through the sacred ground, but through the scrub several yards on the western side of it, along the track shown on the Plate from No. 1 to No. 13. This was done so that they might not even catch a glimpse of the carvings in the soil or other devices. They were kept here for a short time, during which their guardians and the old men who were with them gave them advice as to their future conduct, and also instructions as to their behaviour during the remainder of the ceremonies. After this they were taken to a camp 3 or 4 miles distant, and the blankets taken off their heads, when they joined the men in hunting during the rest of the day. At night their guardians remained with them, the other men camping close by. It was a Tuesday morning on which they were taken away from the circle, and were kept in this camp till the following Friday. During the nights which they remained at this camp two or three of the men would go away unobserved into the adjacent scrub in different directions and swing their bull-roarers. Some of the men would rush out round the novices' camp, rattling their boomerangs together and making hideous noises, yelling and shouting in their own language "Go away! Go away!" pretending that they were beating off Dhuramoolan, who was trying to come and burn the boys.

On the Friday afternoon two or three of the men returned to the new camp, where the women and children had removed to, and reported that Dhuramoolan would show them the boys that night a few hours after dark at a place which they described, about 15 chains from the camp, where they had formed a bough yard (*tharrawonga*) resembling a horse shoe in shape, 42 feet across the open end, and 24 feet deep. The wall was 6 or 7 feet high, and the open end faced the direction of the place to which the boys had been taken during their stay in the bush. Within this yard, near the back wall, a kind of platform, about 15 or 18 inches high, was made by laying sheets of bark on the top of short logs taken there for the purpose. About dusk the female relatives and friends of the novices went to the bough yard and made a fire outside of the curved end, at which they remained awaiting the arrival of the

boys. They also lit a fire in front of the yard to give light during the ceremony which was shortly to take place. About 9 o'clock at night the guardians with their novices, followed by a number of the men, emerged from a thick scrub facing the open end of the yard and about 50 or 60 yards distant. Behind these a couple of men were loudly sounding bull-roarers to make the women and novices believe that Dhuramoolan was present. Advancing across an open space which was naturally clear, the guardians and their novices entered the yard. As soon as the last of the men got out of the scrub referred to into the open ground, the sound of the bull-roarers ceased. The guardians sat down on the platform, and the boys got on top of their shoulders, their legs hanging down in front, and were held in the hands of the guardians. The novices now extended their arms horizontally, and kept their eyes closed. At a signal from the men the sisters of the boys entered the yard, and walking up close to them squirted pipe-clay out of their mouths into their faces. The women then retired, and went away to their own camp. None of the boys had mothers in the camp, otherwise they would have attended on this occasion. While this ceremony was going on the men who were there as spectators stood near the entrance to the yard and facing the boys. The boys were now let down from the shoulders of their guardians, and, accompanied by them, camped in the yard all night.

The following morning the boys were again taken away into the bush for three or four days more, to be further instructed in the tribal ordinances. During this time they were taught certain songs and dances, which the women and uninitiated know nothing about. There are dances, as well as songs, which it is unlawful to teach anywhere than at the Būrbūng ceremonies and are only seen and heard there.

A new name is given to each of the boys, which is known only to themselves and the initiated men of the tribe. Every animal has a general name by which it is known to all, including the women and children, and a secret name which is known only to the initiated. The novices are made familiar with all these names during their stay with the old men. At the time New South Wales was first settled by Europeans, before the knocking out of a front tooth fell into disuse, that ceremony also was performed during the time the boys were out in the bush with the old men.

One day there was a sham fight. A section of the men had caught some game, say, a kangaroo or emu, and ate it all themselves. The others said to them, "Why did you not give us some of that?—we are with you, and you ought to have shared with us!" Both sides then pretended to get very

angry, and challenged each other to combat, making the novices believe they were in earnest. Weapons were thrown about in apparent reality for a short time, after which they all made friends again.

During the whole of the time the novices were out in the bush with the chief initiator and the band of men who accompanied him, numerous ceremonial and pantomimic performances were enacted, which space will not permit me to describe at present.

On the afternoon of the last day of this period, the heads of the boys were again covered with blankets, as at the first. A fire was lighted about 50 yards off, and when the crackling of the wood and roaring of the flame became audible, several old men suddenly commenced to sound bull-roarers, whilst others beat the ground with pieces of bark in each hand, similar to those used at the circle. The old men told the boys they were going to be burnt by Dhuramoolan. When it was thought that the novices had been sufficiently impressed, at a given signal the guardians lifted the blankets off their heads, and the principal headman, pointing to the men with the bull-roarers, said, "There he is! that is Dhuramoolan," and proceeded to explain to the boys how the noise was made at the circle the morning they were taken away, and at all other places where they had heard it, by sounding bull-roarers and beating the ground with pieces of bark, similar to those now before them. The story of Dhuramoolan, and the origin of the *mudhega* was then detailed to them, and they were told that they must hand down this custom to the boys of the tribe. They were cautioned against revealing anything connected with the secret ceremonies to the women or uninitiated on pain of death. They were also instructed in the sacred traditions respecting Baiamai, and in the ancestral beliefs generally. The bull-roarers were then handed to the novices and they were invited to examine and whirl them round, to make themselves fully acquainted with their form and use. The *moonibear* was also shown to the novices and its use explained to them. They were, however, strictly forbidden to make either of these sacred instruments except at the Burbung. An hour or two after this, the bull-roarers were destroyed by splitting them in pieces, and driving them into the ground out of sight. Sometimes, instead of doing this, they are burnt.

That night, about an hour after sun-down, the boys were taken to a place in a scrub, near the new camp, and perhaps 10 chains distant from it, where there was the trunk of a fallen tree, lying on the ground, a few yards from one side of which fires were lit to give light. The novices stood on top of the

log, with their guardians standing a little way behind them. Their female relations, who were waiting there when they arrived, walked in front, and after putting their hands upon them, stepped back a few paces and stood there. By burning green bushes on the ground under the log, a great smoke was made, which ascended up around the boys. This was continued for a short time, the women being on the other side of the smoke. The boys were then taken away to the quarters provided for them near the new camp, where they remained for the night, the women returning to the camp from which they had come.

The following morning the Castlereagh river tribe started homewards, and the other natives went with them as far as the Marthaguy Creek, about 10 miles distant. Here the novices were again passed through the smoke ordeal before described, which was the concluding scene of the Burbung. Each tribe then started away on their return journey to their respective districts.

General Remarks.—There were four boys initiated at this Burbung, three blacks and a half caste. There were also present about half a dozen young men who had been initiated at the Burbungs held on the Castlereagh and Bogan Rivers some two or three years before, and who attended this one for the purpose of seeing the devices on Baiamai's Ground, and being further instructed in the traditions of the tribes. The extraction of a front tooth, or the eating of human ordure¹ was not enforced, although both these rites were practised by the natives of these districts in the early days of European settlement, but have been discontinued for several years. Neither was the hair of the novices cut off, as in the Kamilaroi Bora described by me.²

Three dialects were spoken by the natives who attended this gathering, but were mutually understood by all. The people from the Castlereagh, the Mole and the Barwan spoke *Wailwan*, those from the Bogan and Cobar spoke *Wonghibon*, and those from the upper Macquarie, the *Wiradthur* dialect. All of these tribes have the same class system and all belong to the Wiradthuri community, one of the branches of the great Kamilaroi organisation, which I have described in my paper to the Royal Geographical Society of Australasia, before referred to.

Other Initiation Grounds.—It seems to me very desirable that we should have an opportunity of observing the resemblances and dissimilarities not only in the details of the ceremonies themselves, but also in the form of the grounds—the natural temples—in which these ceremonies are carried out. This

¹ "Aboriginal Bora held at Gundabloui in 1894" published in "Journ. Roy. Soc. N.S. Wales." xxviii, pp. 103-4.

² *Ibid*, pp. 98-129.

remark applies with greater force to tribes more or less diverse in their modes of celebrating this sacred rite, and occupying tracts of country widely separated from each other.

Carefully prepared plans, showing the ground occupied during the various stages of the ceremonies will, in my opinion, be found of great assistance in elucidating the written details, and impressing them upon the mind of the student, as well as affording greater facilities for comparison of the initiation grounds used by different tribes.

In my paper on the "Bora, or Initiation Ceremonies of the Kamilaroi Tribe," published in the "Journal of the Anthropological Institute of Great Britain," vol. xxiv, pp. 411-427, I gave an account of the initiation ceremonies of a section of the Kamilaroi community, with a plate showing the devices marked upon the trees and on the turf, with other information. I have since regretted that I did not add another Plate showing the general encampment and its surroundings, the position of Baiamai's image, the new camp, &c. It has therefore occurred to me that it would add to the value of the present paper if I were to include in it a Plate giving the particulars indicated. In accordance with this view I have prepared Plate XXVII, Sect. I, an explanation of which is included in my descriptions of the Plates.

A short time since I wrote to my friend and fellow worker, Mr. A. W. Howitt, F.G.S., asking if he would kindly furnish me with sketches for publication of the ground showing the position of the various stages of the Kuringal of the Murring tribe, described by him in the "Journal of the Anthropological Institute of Great Britain," vol. xiii, pp. 432-459, and also of the locality showing the ground on which the Jeraeil of the Kurnai tribe took place, detailed by him in vol. xiv, pp. 301-325, of the Journal mentioned. Mr. Howitt willingly acceded to my request, and from the information I have been able to prepare Sections II and III of Plates XXVII with short explanatory descriptions.

I wish it to be understood that I do not hold myself responsible for the accuracy of the statements made in the descriptions of Sections II and III of Plate XXVII. I have merely collated the details from the "Journals of the Anthropological Institute" in which they originally appeared, assisted by Mr. Howitt's further notes and sketches supplied direct to me. I have, however, exercised the greatest care, and have done my best with the information at my disposal.

It will be seen that, in addition to the account of the Wiradthuri *Būrbāng*, I have introduced into this paper original plans and descriptions of the initiation grounds of the Kamilaroi *Bora*—the Murring *Kūringal*,—and the Kurnai *Jeraeil*, representing

the initiation ceremonies of four separate communities, all differing more or less in detail, both as regards the particulars of the ceremonies, and in the form of the several grounds. They are, moreover, separated from each other by long distances. From McLennan's Strait in Victoria, where the Jeraeil took place, to the site of the Bora, near the northern boundary of New South Wales, is a distance of over 600 miles in a direct line.

It is not my intention at present to draw attention to the points of resemblance, or the differences, in the manner of the celebration of these ceremonies among the tribes mentioned, because I do not think the examples within our reach are sufficient to enable us to attempt a work of this kind. There is a very wide field of unbroken ground yet before us in regard to the initiation ceremonies of the Australian aborigines.

DESCRIPTION OF PLATES XXV--XXVII.

Plate XXV.

This plate shows the Burbung ground of the Wiradthuri tribe, as described in this paper.

No. 1 is the oval space 86 feet by 77 feet, where the reception of contingents and other ceremonies were held. This circle is shown on a large scale in Diagram 2. No. 2 is the site of the camp of the Macquarie river tribe, who are the hosts, because the gathering took place in their country. No. 3 is the Castle-reagh tribe. No. 4 the Barwan tribe. Nos. 5 and 6 the Bogan and Cobar tribes respectively. Nos. 7 and 8 are two native ovens, or large holes in the ground, in which animals were cooked. No. 9 is the location of the figure of Gunnanbeely (Fig. 36, Plate XXVI.) Nos. 10 and 11 are the sites of the figure of Baiamai, and his fire respectively. No. 12 is the goombo of which an enlargement showing detail is given in Diagram 3. No. 13 is the place 48 yards from the goombo where the boys were first halted on the morning they were taken from the circle, No. 1, by their guardians. The dotted line from 1 to 13 represents their line of march. No. 14 is the spot within the circle where the headman stood when welcoming the various contingents, and also on the morning of the final ceremony. No. 15 represents the wavy or sinuous line in which contingents marched when arriving at the circle. This plate also shows the tharrawonga where the women blew pipe-clay in the faces of the novices, whilst held on their guardians' shoulders—the place where the smoky fire was made between the novices and their female relatives—and the position of the new camp. For full particulars the reader is referred to the text.

Plate XXVI.

The most important of the *yammunjamun* marked upon the ground and upon trees, &c., at the Wiradthuri Burbung are delineated on this plate.

Figs. 1 to 18 show some of the best of the markings on the trees. In Fig. 1 are represented two fishes, one of which is 2 feet 10 inches long, and is going up the tree, the other is 1 foot 8 inches long, and is coming down. There are a few crooked lines as well as the fish. Fig. 4 shows the sun and moon, the latter about four days old; this is the tree in which the eagle-hawk's nest is built. Fig. 5 represents a snake about 6 feet long twisted round a tree. Fig. 9 is intended for a turtle and is over 3 feet long. Fig. 13 represents a tree struck by lightning. Figs. 11, 14, 17 and 18 are delineations of iguanas, the largest of which is 6 feet, and the smallest 4 feet 6 inches in length.¹

Figs. 19 to 33 are devices of various patterns cut upon the surface of the ground, the most interesting of which is the wahwee, Fig. 30. Figs. 34, 35 and 36 represent respectively an emu, one of Baiamai's sons, and Gunnaabeely delineated upon the ground by means of a nick or groove cut in the soil. Fig. 37 is a representation of Baiamai lying face downwards on the ground. It is 21 feet 8 inches long, and is built up of loose earth. Figs. 38 and 39 represent the *mudthega* and *moonibear* respectively, the large and small bull-roarer used at the initiation ceremonies, with the string attached to them. Fig. 40 represents one of the strips of bark used in beating the ground; it is 2 feet 6 inches long and 4½ inches broad at the widest part. One of these pieces of bark, and also a bull-roarer, used at the ceremonies, were presented to me by the headman, and are now in my possession. Most of the Figs. on this Plate are more particularly referred to in the text of this paper.

PLATE XXVII.

(Section I.)

. The pages refer to "Journ. Anthropol. Inst.," vol. xxiv.

This shows the Bora ground of the Kamilaroi tribes.

No. 1. Camp of Jack Bagot, with the local tribe from Mogil Mogil, Collarendabri and Walgett; No. 2, the Mungindi, Kuno-

¹ Aboriginal drawings of snakes, iguanas, the sun and moon, fish, &c., painted on the walls of caves, or carved upon smooth rocks, have been described by me in other publications. See "Australian Rock Pictures" in "The American Anthropologist" (Washington), viii, pp. 268-278; also "Aboriginal Rock Paintings and Carvings in N.S. Wales," in the "Proceedings of the Royal Society of Victoria," vii, N.S., pp. 143-156.

pia and Welltown contingent; No. 3, the Moonie and St. George tribe, p. 413. No. 4 is the place where the various contingents danced corroborees at night during the Bora, pp. 419–420.

No. 5. The large circle 70 feet in diameter, surrounded by a raised earthen wall about a foot high, p. 414. Here the preliminary ceremonies were held at which the women, novices and children were present, p. 418. From here the boys were taken away by their guardians, p. 421.

No. 6. Baiamai's Fire, p. 418, and No. 7, the image of Baiamai 15 feet long, formed of raised earth and logs. Opposite to him was Gunnanbeely, his wife, pp. 415–416.

No. 8. The smaller circle, 45 feet in diameter, in which were two seats (*waddengahlee*) about 5 feet high. From the Bora ground the novices were taken to Mungaroo, about 6 miles distant, where a semi-circular yard was made in which they camped, p. 422.

Nos. 9, 10 and 11 shows the new camp, No. 9 being the camp of the local tribe, the others being arranged in the same order as at the first place. The distance from No. 1 to No. 9 is about half a mile, but on the plate it scales only half that distance, owing to want of space. The new camp, the bough-yard and the novices' camp are here shown in their correct relative positions.

No. 12. Bough-yard near the new camp where the novices were shown to their female relatives at a smoky fire, pp. 424–425.

No. 13. The camp to which the novices were taken after passing through the smoke ordeal, p. 425.

Section II.

. The pages refer to "Journ. Anthropol. Inst.," vol. xiii.

The Kūringal¹ of the Murring tribe took place in the hills about five miles easterly from the junction of the Bega and Brogo rivers in the county of Auckland, New South Wales.

No. 1, the main camp, is not shown on the plate, owing to want of space. Here the women were covered up, and the novices taken charge of by their *Kabos* or guardians, p. 442.

No. 2. The place where the novices were rubbed with red ochre and fat, and shrouded in blankets and instructed by the *Kabos*, about 3 or 4 miles from the main camp at No. 1, pp. 442–3.

Nos. 3 to 7. Stopping places on the way out where dances were performed by the wizards, pp. 444–5. At No. 7, a low arch of bent saplings had been made underneath which the novices had to crawl.

¹ The Kūringal—also called Koolyadoo and Kutja among some tribes—is a short or abridged form of the initiation ceremonies, and is only used when there is no time, or it is otherwise inconvenient, to hold the complete ceremony, which is called the Bunan.—R. H. M.

No. 8. A circular space, say from 50 feet to 60 feet in diameter, carefully cleared of everything, but not surrounded by a raised border of any kind. In the centre was a large fire (*talmarū*), and outside of this space were the camps of the men of the several tribes each in the direction of their own country. All the novices with their Kabos camped by themselves, p. 445.

No. 9. A small cleared space in which the tooth was knocked out. It was about a quarter of a mile down the ridge along a rocky cattle track leading to the creek, and was about 200 feet lower than the camp at No. 8. The figure of Daramulun was cut on a tree facing this spot, but was obliterated after the ceremonies, pp. 446-7. From here the boys were taken back to No. 8, where they were invested with the belt, kilt, and other insignia of manhood, p. 449.

No. 10. Small rocky hill where the bull-roarer was concealed when not in use by the messenger who had arrived with the most distant contingent.

No. 11. Earthen image, life size, of Daramūlūn lying on the ground, p. 452.

No. 12. Grave where one of the wizards was buried and then resurrected by the other wizards by means of chants and dances around the grave, p. 453.

No. 13. Waterhole in a small creek where the men washed off the charcoal powder with which they had been smeared and splashed water over the novices, p. 454.

No. 14. Place where the novices were halted to be finally instructed. Here the bull-roarers were shown them, and secrecy enjoined, p. 454.

No. 15. High peak overlooking the low country where the novices were decked with their newly acquired men's attire, and painted after the manner customary in the tribe p. 455.

No. 16. Place where the Kabos took the novices on their shoulders, and marched to the new camp surrounded by the men bearing boughs, p. 455.

No. 17. The new camp where the novices were momentarily shown to their mothers at a hut where there was a smoky fire, before being sent into the bush by themselves during a period of probation, p. 455.

Section III.

*** The pages refer to "Journ. Anthrop. Inst.," vol. xiv.

This illustrates the Jeraeil¹ ground of the Kurnai tribe.

No. 1. The main camp was about 3 chains southerly from the southern bank of McLennan's Strait, near the old crossing place

¹ After the publication of all the papers on which I am engaged respecting the initiation ceremonies of different tribes, it is probable that they will suggest

of the now disused Port Albert Road. This Strait connects Lake Wellington and Lake Victoria. The people camped on either side of the headman, in the direction in which they had come; No. 2 being the young men's camp. This place was a favourite old Jeraeil ground of the Kurnai tribe. It is flat sandy land very little elevated above the level of the sea. It is in the county of Buln-Buln, in the colony of Victoria.

No. 3. The Jeraeil ground is an open space about a quarter of a mile from the camp, all the little bushes were chopped up, and the ground cleared of sticks and rubbish, p. 304. Here sat the novices with their Krauun behind them, p. 305.

No. 4. The place where the men disguised themselves, and with their headman ran forward along the dotted line to the front of the novices at No. 3, p. 305.

No. 5. The semi-circular enclosure of boughs, p. 306, where the novices were put to sleep, p. 308, and after awakening were invested with the belt, kilt, &c.

No. 6. The camp where the novices were kept and instructed by their bullawangs, pp. 311 and 315.

No. 7. Place at the edge of a dense scrub of tea-tree, with a little open plain of some 50 acres in front, where the novices were shown the bull-roarers and afterwards played the opossum game, pp. 312-314.

No. 8. The place where the girls (Krauun) offered food to the novices, p. 315.

No. 9. Place where the "ghosts" provided meat for the novices, p. 318.

No. 10. The dotted line from No. 6 to No. 10 is where the novices, at night, sounded the bull-roarers to frighten the women—Tündün being supposed to be leaving the camp—and ceased the noise at No. 10 on the bank of the Strait, p. 315.

The BORA, or INITIATION CEREMONIES of the KAMILAROI TRIBE.
(Part II.) By R. H. MATHEWS, Licensed Surveyor, N.S.W.

Introduction.—Last January (1895) I contributed a paper bearing the above title to the *Journal* of this Institute.¹ That paper was prepared, as before stated by me elsewhere,² from information supplied by a correspondent, Mr. J. T. Crawley, an officer of the New South Wales Mounted Police, stationed at Mogil Mogil, not far from the scene of the Bora. From my further details of the Jeraeil, which may be obtained by enquiry from some of the old Kurnai men who are still living.—R. H. M.

¹ "Journ. Anthropol. Inst.," xxiv, pp. 411-427.

² "Journ. Roy. Soc., N.S. Wales," xxviii, pp. 105-106.

general knowledge of the initiation ceremonies, and other customs of the aborigines, gained during many years' residence in the interior of New South Wales, I was able to give him an outline of the proceedings, and requested him to collect all the particulars he could. When the paper was in the press I obtained some further details from my correspondent, but unfortunately it was then too late to incorporate the additional matter with that paper. Being especially eager to make my account of the Bora as comprehensive and accurate as possible, I then determined to travel into the district in which it took place, and personally visit the tribes who had been present at it. This involved a journey of 350 miles to Narrabri by railway, and 150 miles by stage coach from there to Mungindi, on the Barwan river, which at that place forms the boundary between New South Wales and Queensland. From Mungindi, both by vehicle and on horseback, I visited several native camps, at all of which I met a number of the men who had been at the Gündabloui Bora. At each of these camps I took some of the initiated men into the adjacent bush, and showed them the bullroarer and other sacred emblems given to me by the headman of the Wiradthuri tribe, on the occasion of his having confided to me the whole ceremonial of the Bûrbûng. Upon seeing these emblems, and learning from my conversation that I was also acquainted with the esoteric mysteries of the Bora, they treated me as one who had been initiated, and gave me all the further information I wished to obtain.

I will now endeavour to supplement my former account of the Bora by the fuller details collected by myself in the camps of the natives. In doing this it will be desirable to continue the same arrangement of the heads of the subject as that adopted in the first paper,¹ so that all the matter under each heading in both papers may be read together. Thus, under the sub-head of *Mustering the Tribes*, the reader is requested to refer to these sub-heads in each paper, so that he may see all the particulars relating to the manner of gathering the tribes to attend the Bora ceremonies. This explanation will apply to each of the other sub-headings in both papers, which should be read together as a whole.

The reader will observe that I have excised a few paragraphs in different places in the former paper, which were not sufficiently full, or contained some inaccuracies of detail. These were compiled from Mr. Crawley's statements, and although they are substantially correct, they are not exact enough for scientific purposes.

Mustering the Tribes.—See the "Journal of the Anthropo-

¹ "Journ. Anthropol. Inst.," xxiv, pp. 411-427.

logical Institute," vol xxiv, pp. 411 to 413. At p. 411, the whole of note ¹ should be struck out. At p. 142, all the words from the commencement of line 16, to the word "headman" in line 24, should be cancelled; also, all the words commencing with the word "and" in line 41, to the end of the page. At p. 413, all the words commencing at the head of the page to the word "arranged" in line 5 should be struck out.

When a messenger is despatched, he takes with him a novice painted red all over, and a guardian to mind the novice. The messenger carries a bullroarer, kilt, belt, and one or more boomerangs. When he gets within about half a mile of the camp he freshly paints the novice red, and he and the man who has charge of the novice also paint themselves according to the tribal device. In coming within sight of the camp they give a shout, which is answered by the people there, who, when they see the youth painted red, know they are Bora messengers. All hands—men, women, and children—then quickly muster at some level place close to the camp, and pull handfuls of grass, which they lay on the ground, and form a ring, perhaps 30 or 40 feet in diameter, with a small opening in one side. If there is no long grass, they break small bushes and lay them around, inclosing a circular space. The messenger, novice, and guardian then advance in single file, and walk into the ring through the opening in its boundary. The men of the place are lying down on the side of the ring next the camp—the women sitting on the ground close beside them. The messenger and his comrades then dance round a few times inside the ring, and then form in a line near the edge of it farthest from the camp, where they remain standing. The men of the place then get up and mark time with their feet, and swing their arms for a short time, after which they step into the ring and jump round a few times, and then join the messengers, when all of them jump or dance round together, calling out the names of a few camping places in their country. The women, who have provided themselves with bushes for the purpose, now enter the ring and pull handfuls of leaves which they throw at the men as they dance round. At the conclusion of this performance they all come out of the ring and proceed to the camp. The novice, painted red all over, retires with his guardian in company with the boys and women of the tribe, who commence to sing; but the messenger goes with the headmen and others a short distance from the camp, where he shows them the bullroarer and other articles, and delivers all the particulars about the approaching Bora. Shortly after dark one of the men goes into a secluded place a short distance from the camp, and sounds a bullroarer, which is answered by the gins singing and beating on their rugs. During the evening

the men generally get up a corroboree in honour of their visitors.

In a few days' time, or perhaps the next day if the time is limited, the message is sent on to the next tribe. This is done either by the same messengers, or by the headmen of the tribe they have visited. If the latter, the headman selects from among his own people a novice and guardian, and also a man to act as a messenger, to the latter of whom he hands the bull-roarer and other emblems which he has received. These men then start away to the next tribe, and the details of their procedure there are precisely the same as have just been described.

The novice who is brought to a tribe in this way remains with them, one of their men being appointed as a new guardian, the other two men returning to the tribe from which they had come. The novice stays with the people to whom he has been sent, and is brought back by them when they come to the Bora. If a sufficient number of novices are not available to provide one to accompany each messenger, an initiated man goes alone to some of the tribes, carrying the bullroarer and other emblems of his mission. The particulars of the journey of each tribe towards the Bora are given in my former paper.¹

The messengers are generally chosen from the same class and totem as the principal headman who summons the tribes to attend the Bora, and the message is sent to a headman of the same class in the tribe to be invited. The message is likewise sent on from tribe to tribe by men of the same class. If suitable men of the required class and totem cannot be obtained, the messengers may be selected according to their fitness to perform the duties entrusted to them, irrespective of class distinctions.

When a mob of natives get within an easy day's stage of the general encampment, a man is sent ahead to give notice that they will arrive that afternoon, thus giving the people there an opportunity to prepare to accord them the customary reception. When this assemblage gets within a quarter of a mile of the camp a halt is made for the purpose of decorating themselves with paint and feathers. When all is ready, they give a shout which is answered from the camp, and then they start on in single file—the men in the lead, the women and boys following. The people from the main camp, whom I will call the hosts, are by this time assembling at one side of the large ring² of the Bora ground. The men and women form into groups according to their classes, and sit down around the outside of the embankment, the men and women being mixed together, all having

¹ "Journ. Anthropol. Inst.," xxiv, p. 412.

² "Journ. Anthropol. Inst.," xxiv, p. 414.

red stripes on their faces. All the novices in the camp are painted red, and are placed sitting on the bank with their feet within the ring. The new comers now approach in single file, and the men enter the ring carrying their weapons in their hands. The women and novices form into groups on the outside of the ring, on the side opposite to the hosts, the novice who accompanied the messenger being among them. The men tramp round in single file several times, and then form into a cluster in the middle of the ring. After this they form in a line near their own side, marking time with their feet and waving their arms for a little while, after which they withdraw altogether from the ring, and stand just outside the embankment. All this time they have their weapons in their hands.

The hosts now rise to their knees, and sway their arms from side to side a number of times, after which they rise to their feet and mark time for a few minutes, and then step over the embankment into the ring, and mark time again, swaying their arms as before. They then stamp round inside the ring, the headmen shouting out the names of several well known places in their country. Each headman in succession names a few places in their respective districts, each name being received with shouts. After this they step out of the ring and pick up their weapons, which up to this time have been lying on the ground. During these performances the women of the hosts have risen to their feet, and are standing a few paces back from the circle. The hosts then enter the circle again, carrying their weapons in their hands, and step forward a little way. The strangers also re-enter the ring and step forward a few paces; the hosts make another advance, and so do the strangers; these advances are made alternately until both sides are close to each other in the middle of the ring.

A welcome is now accorded to the novice who was sent with the messenger to summon the contingent. Supposing, for example, he is of the Murri class; a Kumbo advances from the side of the hosts and brings the novice Murri into the ring behind the men of the hosts, who turn their faces towards him, and dance in a semi-circle before him and his companion. The guardian on the strangers' side, who had the novice in charge, then steps forward, and conducts him back to the other boys from among whom he has just previously been taken.

The reader must now go back to where we left off at the end of the preceding paragraph. Both lots of men, the hosts and the strangers, now go right up to each other, and mix together and dance round in the ring. Then the novices belonging to

the strangers enter the ring, and the boys of the hosts who have been sitting on the embankment all this time rise to their feet and join them. The combined assembly of novices now run in amongst the men, and all of them dance round. The headmen of the strangers now call out the names of a few remarkable places in their own district, the name of each place being the signal for shouts as before. All the women of both sides now enter the ring, with green boughs in their hands, from which they pluck handfuls of leaves and throw them at the men as they dance round.

All now come out of the ring and separate the boys into groups according to their tribes, and place them sitting on the bank with their backs towards the ring. The women of each tribe then stand behind the boys with their faces in the same direction, and sing *bobbarubwar* songs. The women, and also the boys, are forbidden to look round. A number of men then stand behind the women. These precautions are taken to prevent the women and boys from seeing what is now to take place. One of the young men who is a good runner now runs around once inside the ring, and then away along the track leading to Baiamai's ground, and is followed by the other men. As soon as the first man gets out of sight he commences to swing the *murrawan*. The women and novices now start away to the main camp, where those belonging to the new comers commence to put up their temporary dwellings on the side nearest their own country.

Meantime the men of the new contingent are being shown the *yammunjamun*¹ on the ground and on the trees, the figures of Baiamai and Gunnaubeely and other devices, as far as the Goomee or Baiamai's fire. During this time a bullroarer is sounded at intervals, and as each figure or device is shown all the men raise a shout. A halt is made at the large cleared space around the Goomee, and some of the old men entertain the company by magical feats, bringing up through their mouths quartz crystals and other substances. At the end of each feat they run, with their heads down, in amongst their audience, catching hold of some one or more, and pulling off some part of their attire, such as a string from their *barranjal* (kilt) or the like, which they at once either swallow or pretend to do so. If the new comers have arrived early they may be shown over the remainder of the Bora ground, but, generally speaking, by the time the performances at the Goomee are concluded, it is time to proceed to the camp.

The men now retrace their steps towards the large ring, again

¹ A Kamilaroi word for the carvings on the soil and on the trees at the Bora ground.

looking at the various symbols as they go. When the ring is reached they start shouting, towards the camp, the men of the several classes going together. On coming within a few chains of the camp, they are met by the novices and several of the women, who each fall in with the men of their own class, and all proceed to a cleared space in the camp, where they dance round a few times, naming places in their several districts, and the women throw handfuls of leaves at them, after which they all disperse to their respective quarters.

The following afternoon, all the men, women, and novices assemble at the large ring, and go through the regular performances detailed in my former paper, after which the men go away in the usual manner to the sacred ground—the women and novices returning to the camp. The men of the contingent which arrived yesterday are now shown the remainder of the sacred ground in the following manner. The hosts are, as usual, the first to leave the large ring, and go to the Goomee, followed by the new arrivals. Some of them remain there, whilst a considerable number go on to the Goonaba and sit down on the ground on the most distant side of the smaller ring close to the outside of the embankment forming its wall. Two old men, with their bodies and limbs smeared with human blood, then ascend the *waddengahly* or seats formed of the inverted stumps, of trees and stand on top of the roots, beating two nullas together.

While these preparations are being made by the hosts, the new arrivals, who have come no further than the Goomee, have provided themselves with firesticks obtained at the large fire burning there; these are rolled up in green bushes for the purpose of making a smoke, and are carried in one hand, a boomerang being held in the other. They then advance along the track towards the Goonaba, and on getting close to it they rush up near the first side of the ring waving their smoky sticks, and make a feint of throwing the boomerangs at the men who are lying down on the other side of it. They dance there for a few minutes, after which they throw away their firesticks and form into a row. The hosts then rise to their feet and dance about, clapping their hands on their hips: they then enter the ring, and pick the sticks out of all the small heaps of earth and throw them out on one side, after which they scatter the loose soil of which the heaps are composed with their feet all over the ring, making the surface of the latter level. The whole assembly then enter the ring and dance about; the two men now descend from the *waddengahly*, and in turn perform some of their magical feats, running after the men around them after each trick. Some of their performances consist of drinking blood

out of a coolamin or large shell. Some of the other wizards of both sides then go through similar acts of jugglery.

After this, the new arrivals, accompanied by the others, walk leisurely over the ground, looking at the *yammunyamun* between the Goonaba and the Goomee. At the latter some further tricks and merrymaking may be indulged in, and then they look again over the drawings they saw yesterday. After this they return to the large ring, and dance round within it a few times, the old men of each tribe shouting out the names of a few well known places in their respective districts. They then return to the main camp, where they are received in the usual manner.

The Camp.—See the "Journal of the Anthropological Institute," vol. xxiv, p. 413. The words "and Namoi," in line 37, should be struck out. There is nothing further to be added.

The Bora Ground.—See the "Journal of the Anthropological Institute," vol. xxiv, pp. 413 to 418. At p. 414, all the words commencing with "These" in line 37, to the word "novices," in line 39, should be struck out.

The stumps of saplings, called *vaddengahly* which were inserted in the ground with their roots upwards, mentioned in my former paper,¹ were smeared with human blood. The blood for this purpose was obtained by making small incisions with a piece of sharp flint or shell in the arms of several men, and collecting the blood in vessels as it dripped from the wounds. Scattered over the floor of the smaller circle, which is called *goonaba*, were a considerable number of small heaps of loose earth, each of which had a short stick inserted perpendicularly in the top. When welcoming a new contingent of natives these heaps were flattened down, as stated in my paper, but were restored before another contingent appeared. After the last contingent had arrived, the heaps were not again erected.

In addition to the numerous objects delineated on the Bora ground, and formerly described, there was a bower-birds² arbour or "playhouse" close to the track and near the commencement of the carvings in the soil. This was formed by laying on the ground pieces of bone, small stones, and seeds of wild fruits, over which the tops of the tall grass was bent, in imitation of the "bowers" formed by these birds in the bush.

Preliminary Ceremonies.—See the "Journal of the Anthro-

¹ "Journ. Anthropol. Inst.," xxiv, p. 414.

² Such places are used only as "playhouses," as they are called by bushmen the bird builds its nest for breeding purposes in a tree.

pological Institute," vol. xxiv, pp. 418 to 420. At p. 418, all the words commencing with the word "Every" in line 27 to the end of the page, should be struck out. At p. 419 all the words from the head of the page to the end of line 22 should be struck out.

Almost every afternoon in fine weather the men, women, and novices painted themselves and proceeded to the large ring two or three hours before sun-down. The men started first, and were followed by the women and novices. On reaching the circle, the men gathered round it, having a weapon in each hand, such as a nulla-nulla and a boomerang, two nulla-nullas, or any two available weapons. The novices and women stood close by, the latter having green bushes in their hands. Little boys and girls who had accompanied their parents would sit down or play about a short distance off, watching the men and women.

The men, who are standing just outside the ring, each tribe being by themselves on the side next their own country, put one foot forward, resting on the embankment, swaying their bodies to and fro, and waving their arms, uttering monotonous shouts at each movement. The men of each tribe go through these motions in succession, the hosts performing first. After doing this for a few minutes each group of men step over the bank into the circle, and dance in a cluster by themselves. The men of the local tribe then call out the names of a few principal camping places or waterholes in their district. Each of the other tribes in succession also call out the names of notable places in their several countries. All the men now mix together, and the novices enter the ring and join them, all dancing round with much noisymerriment. The women now enter the ring and pluck handfuls of leaves from their green bushes, and throw them at the men as they dance round. The novices are now separated and placed by themselves sitting on the embankment, with the women beside them, and the remainder of the proceedings are practically the same as already described on the arrival of a contingent, except that the impressive ceremony at the *goonaba* is omitted.

Surrendering the Boys to the Head-men.—See the "Journal of the Anthropological Institute," vol. xxiv, pages 420 to 422. At p. 420, all the words commencing with the word "The" and ending with line 30; and all the words commencing with "As" in line 35 to the end of the page should be cancelled. At p. 421 all the lines from the head of the page to line 37 should be struck out. At p. 422, all the words from line 5 to line 20 should be cancelled.

Shortly after the arrival of the last tribe who were

expected to be present, the head-men fixed the day on which the initiation of the novices should commence. In the afternoon of the day preceding the date referred to, all the people assembled at the large ring, and went through the usual performances described at pp. 15 and 16, after which the women and novices returned to the camp, and the men proceeded to the Goomee, or Baiamai's fire, to finally determine the best place for the establishment of the new camp after the assemblage should remove from the Bora ground. Several of the headmen stated their views as to what would be the most convenient locality, some advocating Collybidgelah, others supporting a site somewhere in the direction of Mogil Mogil, but after a heated argument it was decided to merely remove it above half a mile southerly from its original position. One of the men who was in favour of that site then lifted a long pole, which had been previously cut for the purpose, and raising it perpendicularly with one end resting on the ground, let it fall in the direction which had been mutually agreed upon. After which all the men danced round the goomee a number of times shouting as they went. After this they proceeded into the adjacent scrub and with their tomahawks stripped some bark which they shaped into pieces about 2 feet 6 inches long, about 4 inches at the widest end, and 2 inches at the other, so that they could be gripped in the hand; these pieces of bark, called *mungawan*, were piled one on top of the other, and placed near the Goomee, ready for use the following morning. Each man then cut a small sapling or rod, resembling a whip-stick about 6 feet long, which they carried bark to the large ring, within which they danced round with the sticks in their hands, the old men of each tribe shouting out the names of a few important water-holes or other remarkable places in their respective districts. They next formed in a group in the middle of the ring, with their heads down, shouting "po-o-oh!" they then all raised their heads and held up the sticks, pointing in the direction decided upon for the new camp, shouting as they did so. All the men then went to the margin of the ring and threw their sticks outside, all in one heap, lying parallel with each other, with one end pointing towards the proposed camp. Leaving the sticks where they fell, the men returned to the camp and were received by the women and novices in the way described before. Almost immediately a few of the men pretended to dispute about something, and the other men ran up to them making a noise with their mouth like *pir-r-r*, and other sounds. As soon as the women who had attended other Bora gatherings heard these sounds, they knew that the camp was about to be broken up, and commenced droning their *bobbarubwar* songs in

a very melancholy strain, as if sorry that the carnival was at an end.

All the people then packed up their things and started for the large circle, carrying with them sufficient water for use during the night and following morning; they camped contiguous to the ring, each tribe occupying the side facing their respective districts. When the camp had been arranged, the initiated men went away to the Goomee, where the head-men selected those to act as the *Koorungal* or band of warriors who were to accompany the novices and their guardians into the bush, and to assist the chief men to carry out all the formalities of initiation. The men who were to use the bull-roarers, and the *mungawans*, at the circle next morning were also chosen from among the *Koorungal*. Having made these arrangements the men returned to the women at the large ring, and during the evening a corroboree took place, after which the women and novices lay down to sleep. Some of the men then went into the adjacent scrub and imitated the quacking of the wood-duck, after which they went up a tree and commenced chopping with their tomahawks as if cutting out a native bees' nest. Promiscuous intercourse with the women is always permitted on this final night at the circle, and consequently some of the men were going about through the camp the greater part of the night.

During the night the men who had been chosen for the *Koorungal* and the *mungawans* left the camp unobserved by the women and novices, and proceeded to the Goomee, where they remained until the morning. At daylight one of them sounded the bull-roarer, which was responded to by the people at the camp; the women singing *bobbarubwar*, and the men raised the customary shout. Some of the men and women then proceeded to cut forks and boughs and erected a bush fence around outside the ring, about 2 feet distant from the embankment—the fence extending about two-thirds of the circumference, leaving the side from which the track, *thunburran*, issued unfenced. During this time the novices were being painted in the camp, each tribe decorating their own boys; but in this matter the class distinctions have to be complied with. For example, one of the novices is an *Ippai* Carpet-snake; a guardian is selected for him from among the men of the *Kubbi* class, but of a totem different to his own. This man and his sister *Kubbitha* then paint the novice. He is first painted all over with raddle and grease, giving him a shiny red colour, on top of which a few stripes of white are added about the face and chest, in accordance with his tribal device, having also birds' feathers inserted in his hair. The other boys would be

decorated in a similar manner; an Ippai and his sister Ippatha would paint a Kubbi novice; a Murri and his sister Matha would paint a Kumbo; and a Kumbo and his sister Butha would paint a Murri boy. When the painting of the novices was completed, they were taken and placed sitting on the earthen embankment, with their feet outside—the group of boys belonging to each tribe sitting on that side of the circle which faced the direction of their *taurai* or country—their heads being covered with blankets. The mothers of the boys were placed lying on the ground on the other side of the bush fence, each mother being opposite to her son, with her head towards him; the other women and the children being a little way farther back. Each woman lies on her side, with her elbow on the ground, and her head resting on her hand, with her eyes towards the ground. They were then covered over with rugs, blankets and bushes to prevent them from seeing what was about to take place, and a few men with spears in their hands, deputed to watch them.

During the time that these preparations were going on at the large circle, the *Koorungal* were also at work at the *Goomee*, painting their bodies with powdered charcoal or burnt grass, mixed with grease, which gave them an intense black colour. They also cut long narrow strips of brigalow bark for the purpose of disguising themselves in the manner to be stated presently; only the white inner bark was used, the rough outside being scraped off.

When all the arrangements had been completed the sound of the bull-roarer was heard in the direction of Baiamai's ground, and the men at the camp stood in a semi-circle outside of the ring, beating together two nulla-nullas, or any other two weapons which happened to be at hand. One of the head-men then called out in his own language "Here he comes,"—others shouted "Go away," as if addressing Dhuramoolan. A number of men were now seen coming along the track from the direction of the *Goomee*, and entered the circle and ran round inside the bank, beating the ground with the pieces of bark (*mungawans*) before described. They had a mungawan in each hand, with which they forcibly struck the ground alternately at every step, but uttered no other sound. Having gone round the circle two or three times, they ran away noiselessly along the track to the *Goomee*. As soon as they had gone, some of the men standing round picked up firesticks, and threw them into the ring, scattering the embers about, for the purpose of making the women believe Dhuramoolan had done this when he came for the novices. There were also two men one on each side of the circle vigorously swinging bull-roarers,—when these two men

became giddy, caused by turning round, others took their places. Amid the terrific and deafening din made by the rattling of weapons, and the weird noise of the bull-roarers, the guardians advanced and caught their respective novices by the arm above the elbow, and lifted them to their feet. The boys were strictly enjoined to hold their heads down, and their arms close by their sides. The rugs were now taken off their heads, and they were marched away by their guardians along the track, followed by the men with the bull-roarers.

When the guardians and novices got out of sight, the covering was removed from the women and children, and they were permitted to rise. On looking all around, and seeing the fire scattered about, and the boys gone, they gave vent to their feelings in the usual native fashion. The fathers and relatives of the boys, and some other men not immediately connected with the ceremonies, packed up their things and started away after the novices. The women and children, assisted by a number of the men who remained with them, now packed up, and removed the camp about half a mile southerly from its former¹ position—each tribe selecting their quarters on the side towards their own country. It is imperative, according to ancient tribal custom, to remove the camp to a new site after the boys have been taken away.

Departure of the Boys.—See the "Journal of the Anthropological Institute," vol. xxiv, pages 422 to 424. At p. 422 all the words after "About" in line 21 to the word "circle" in line 31 should be cancelled. At p. 423, the words commencing with "During" in line 12, and ending with "hunt" in line 15; the words "and boys" in line 22; and all the lines from line 26 to the end of the page, should be struck out. At p. 424, the first two lines should be cancelled, and also lines 27 to 31 inclusive.

In the meantime, the guardians had taken the novices away along the track, their eyes being cast upon the ground at their feet, and on reaching a clear space near the commencement of the *yammunyamun*, they were made to lie on the ground face downwards, with their arms close by their sides—their guardians standing near them. While the boys were lying here, the men of the Koorungal, who used the *mungawans*, had time to put on the strips of white bark previously prepared; these were tied across their faces—diagonally across their bodies, and also around their arms and legs. Being thus disguised, they went to where the novices were lying, and on approaching, the guardians clapped their hands on their hips to prevent the novices from hearing them coming. The novices were then ordered to rise to their feet and look at the hideous figures standing before

them. These men, who are called *binnialowee*, now stepped up close to the boys and commenced to dance and wave their arms up and down shouting *pir-r-r*. The boys' faces were now turned the other way, and the guardians again clapped their hands on their hips to allow the *binnialowee* to get away without being heard. Two men now emerged from the scrub a short distance on one side of the pathway, each of whom carried in his left hand a smoking firestick and in his right a boomerang, shouting like *Ah-h-ow!* and other sounds. On coming within 30 or 40 yards they rushed a few steps towards the boys, and threw each a boomerang over the heads of the latter; they did not come up to lift the boomerangs from where they fell, but immediately went away in the direction from which they had come. A bull-roarer was then sounded and the boys were conducted to the *Goomee*, with their eyes cast down upon the ground at their feet. One of the guardians then pretended to see something in the direction of the sun, and said to the novices, "Can you see the bees' nest in that tree over there; they are going in and out of a hole in the top branch." The boys all turned their eyes in the direction indicated, endeavouring to see the object, until told to look down at some men on the other side of the *Goomee* fire. These men, who also belong to the *Koorinal*, and are called *millunga*, were crouching down with their buttocks resting on their heels, and their elbows on their knees; they were painted jet black and were pulling down their lower eyelids with their hands, and staring fiercely at the novices. The sun having momentarily impaired the vision of the latter when looking towards the sky, they could not see very clearly, which caused the *millunga* to appear all the more unearthly and demoniacal. Having looked at these men for a little while, the novices were taken away with their heads bowed down, about 300 or 400 yards, and were placed sitting on the ground. During this brief delay the *Koorinal* left the *Goomee*, and went on a short distance ahead, each man cutting a leafy bough; they then crouched down in a cluster, each one holding his bough in front of him, in such a manner that nothing but a heap of bushes was visible when viewed from that direction. The novices were then brought on with their heads down, and placed standing in a row in front of the bushes, which the men kept shaking as if blown about in a gale. The boys were now directed to look, and two of the head-men, who accompanied them, Jack Bagot and Cowbail Billy, stood out, and one said to the other, "Can you tell me what this is?" The reply was, "You are older than I am—you ought to know best." The first man then struck the ground with his nulla-nulla and called out "Dhurraboolbool!" The *Koorinal* immediately

threw down the boughs and sprang to their feet, shouting, jumping, and waving their arms up and down in regular time for several minutes.

The guardians then marched the novices away with their heads bent and their eyes cast down as before. On proceeding a short distance, the boys were brought to a stand, and the *murrawan* was sounded in the forest behind them. The guardians now clapped their hands and told the boys to run ahead about 20 or 30 yards and stand still; they were then told to run on about the same distance, and stand again. The guardians now gave each boy two or three nulla-nullas for the purpose of joining in hunting wallabies and other game. The boys were in this way liberated from having to gaze upon the ground, and were now allowed to hold their heads up and look in any direction except behind them. The whole company travelled on in this way, the Koorungal walking a short distance behind the guardians, whilst the relatives of the novices and others were in the rear. On nearing a certain waterhole in the bush the boys were brought to a stand, the nulla-nullas taken from them, and they were directed to resume their former attitude of looking only at their feet. Arriving at the waterhole all their accoutrements were laid down, and the Koorungal performed a corroboree, each man hopping along on one leg, keeping time with each other. After this the journey towards the camping place was resumed, the boys being liberated in the usual manner, and a few nulla-nullas given to each after they had gone about 150 yards from the waterhole. The *murrawan* was occasionally sounded by the Koorungal who were walking behind; sometimes a dog's ear was pulled to make him howl, for the purpose of inducing the boys to believe that Dhuramoolan was coming along behind them. On their arrival at Mungaroo a camp was formed as described by me in a previous paper to this Institute.¹ The boys were placed in the yard made for them, and at night-fall food was taken to them by some of the guardians. About an hour afterwards the novices were brought to the men's camp and placed lying on the ground, their heads being covered with blankets. The Koorungal then raised a peculiar weird shout at intervals. This shouting, called *Bungaroo*, is instituted for the purpose of guiding to this camp in the bush any strange blacks who may have arrived at the main camp that day.

Supposing, for example, that a contingent having a few boys to be initiated were a day too late, and on their arrival had found that the main camp had broken up that morning, and that the old men had taken the novices away into the bush: the women and children of such a contingent would proceed to

¹ "Journ. Anthropol. Inst.," xxiv, p. 422.

the new camp, and join the other tribes, but some of the men would take the novices and start out after the Koorungal. They would not come up to the camp, but would stop for the night somewhere out of sight, perhaps half a mile or a mile away, at some place where there was water, and on hearing the *bungaroo* shout, they would reply to it. These salutes would be repeated perhaps several times. Early next morning a few of the strangers would approach the camp carrying in one hand a smoky stick, and in the other a boomerang, and uttering a series of short shouts. The Koorungal, guardians and novices would then stand out, and the new comers after rushing up near them, would retire and go back to their comrades. In a short time they would return, bringing with them their novices, who are put into the bough yard with the others, who know nothing of the new arrivals until placed amongst them. The guardians who would accompany the new boys would join the other guardians, and the other men would attach themselves to the Koorungal. No such contingent joined the camp at Mungaroo, but the formality of the *bungaroo* had to be complied with, in accordance with ancient usage.

At daylight next morning the boys were taken from the men's camp to their own yard, where breakfast was subsequently brought to them by the guardians. After breakfast, men and boys started out hunting, which was kept up the greater part of the day, provisions having run very short on account of the previous day having been so much pre-occupied by the breaking up ceremonies. During the afternoon the boys were called together and were placed standing with their eyes cast down. The Koorungal came up behind them and climbed trees, catching hold of the branches and imitating the posture and noise of locusts. The novices were then turned round and told to look. In a short time the men came down out of the trees and walked along the ground on their hands and feet mimicking locusts. The two old men then interrogated each other as to what animal was meant, and one of them struck the ground with his nulla-nulla, and shouted out "*Ngadalla*" (locusts). The backs of the novices were turned towards the Koorungal for a few minutes, and when they were again told to look round they saw the Koorungal lying on top of each other in a heap called *bóbullai*, which I will endeavour to describe. Supposing there are 20 men in the Koorungal; first about 9 or 10 of them would get down on the ground on their knees and elbows, as close together as they could lie.—then about half a dozen more men would lie on top of these, and the remainder on top of the second lot. A groaning noise is kept up by the men during the time they are in the heap. Most of the positions and gestures are very obscene,

and some of them disgusting. This tableau is enacted at the conclusion of most of the pantomimic performances and dances in the bush. The usual inquiries were exchanged between the old men as to the name of the scene before them, when one hits the earth with his nulla-nulla, and called out "*Boballai babiabbi.*" During the rest of the afternoon, the men separated into two or three detachments, each lot of guardians and their novices going in different directions in pursuit of game. Each detachment of novices on their return to the camp were put into the bough yard. After supper, two or three small fires were lighted on the side of a clear space near the men's camp, and the novices were brought out of their yard and placed standing on one side. The Kcoringal now passed along the clear space in a crouching attitude, jumping and shaking their arms; the leader of the band as well as the man in the rear had each a piece of string, the ends of which they held in their hands, having the middle between their teeth. This string was drawn from side to side through their teeth, the operators making a low noise with their mouth, which was repeated by the other dancers who had no string. As soon as all the actors had passed into the darkness, they returned, repeating the performance a few times, and at the conclusion the old man called out "*Warringun.*" The evening's amusements were brought to a close by the tableau of *boballai*, and the boys were returned to their yard, where a few of the guardians remained with them until bedtime. At bedtime the murrayan was sounded in the adjacent forest, and the boys were brought out of their yard to the guardian's camp, where they slept all night. At daylight the following morning they were again returned to their own yard.

Having fully detailed the procedure for one day, it will be sufficient to state that during the remainder of the stay at this camp, one or more pantomimic performances were gone through every day, some represented hunting incidents, others animals, and others corroborees. At the camp fire the doctors or wizards generally went through some of their tricks of jugglery, such as bringing up out of their mouths pieces of quartz, crystal and other substances. On the last night or two at this camp some of the old men sang Baiamai's song, the words of which, with other native chants, may be given by me on a future occasion. In order to obtain food they went out hunting every day, bringing back to the camp game of various kinds, wild honey, roots, &c.

When the novices were being escorted by their guardians to and from the yard, they had to keep their eyes cast upon the ground. When leaving the camp in the morning, or returning to it in the evening, they were guarded in the same way, and

even when in the yard they were not allowed to raise their heads. During the whole period from the morning on which they were taken from their mothers until they were shown the bull-roarer, they were not allowed to ask any questions or even to speak. If they want anything they had to make signs to their guardians. So rigorous was the surveillance exercised over them that they did not know who was at the men's camp, although the fathers of some of the boys were amongst the company. Among other reasons for keeping the boys in a yard by themselves at the camp, it serves the purpose of preventing them from hearing any of the discussions which take place between the Koorungal and the guardians as to the programme of performances for the next day. The novices know absolutely nothing of what is going to be done, or where they are going; they have simply to do what they are told. As a rule a new camp is reached every night, but on the present occasion, Mungaroo was the only good camping ground available, and therefore most of the time was spent there.

The ceremonies at Mungaroo occupied about a week, at the end of which the camp was broken up, and the return journey towards the new camp at Gundabloni was commenced. On reaching a waterhole in the scrub about a mile from Gundabloni, the men laid down their burdens, and lit a fire for the purpose of camping for the night. The boys were then taken away a short distance into the adjacent forest and were placed sitting down with their backs towards Gundabloni. Two old men then appeared, holding a small bush in each hand. Each man then brought his hands together, in front of him in such a manner that the two bushes hid his head and chest. The leafy end of the bush in one hand was held upwards, and in the other downwards, so that when placed side by side they presented a mass of leaves only. The men marched on in this way, and the novices were told to rise to their feet and look at them. On getting within 20 or 30 yards, they threw down the boughs, and rushed up quite close to the boys, and stood still. The guardians then turned the faces of the novices in the other direction, and the two men went away to the new camp at Gundabloni, and informed the women that the boys would be brought back the following morning.

A few of the principal old women then mustered all the females in the camp, not including the little girls, and drove them into a waterhole in the Moonie river, where they swam about and washed themselves. When they came out of the water they returned to the camp, and danced and sang *bobbarubwar*.

Shortly after the two men started away, the Koorungal formed

a semi-circle behind the boys, who were placed standing in a row with their eyes cast down. Two men with bull-roarers then went out into some clear ground in front of the novices and commenced loudly sounding these instruments. The boys were now directed to look at the two men, and were told that all similar noises that they had ever heard were made in this way. Several of the Koorungal then walked in front of the boys, with uplifted tomahawks in their hands, and told them that if ever they divulged this, or any of the other performances, which they had seen in the bush, to the women or the uninitiated, they would be killed. The murruwans were then given into the hands of the novices, and they were invited to inspect them. The guardians next invested each novice with the belt, kilt, and other articles of a man's dress. They were now admitted to the status of manhood, and were not kept under any further restraint. About half an hour after this, the Koorungal all went into the waterhole and washed the black paint off their bodies; the novices did not wash.

That night, after supper, a number of the men, accompanied by the neophytes, who are now called *tuggabillas*, started for the place where the new camp had been erected. On nearing the place the boys belonging to each tribe separated into groups, and each group then approached that side of the camp in which it was known their mothers would be located. Some of the men accompanied each detachment of boys, and upon arriving in proximity to their own side of the camp, one of the men ascended a tree and gave a peculiar shout. His voice was recognised by his female acquaintances in the camp, who answered him. Each boy now shouted in succession and was answered by his mother. During this time a bull-roarer was being sounded at the butt of the tree. The other detachments of boys, and the men who accompanied them, shouted in a similar manner, adjacent to their mothers' quarters, and were answered in the same way. The women then took burning sticks off the fire and waved them in the air. After this ceremony the men and *tuggabillas* returned to their comrades out at the waterhole in the bush.

While the boys were away at the women's camp, two or three of the men at the waterhole had climbed different trees overhanging the camping place, and remained quietly hidden among the branches. The old men, and the fathers of the *tuggabillas*, now proceeded to give the latter a new name. The Kumbo men gave names to the Kubbi boys, the Murris named the Ippais, the Kubbis named the Kumbos, and the Ippais named the Murri boys. Until now the boys have been called by the name which their parents gave them when they were children

When they go back to the camp their mothers will be told that Dhuramoolan gave them the new name. The neophytes were then forbidden to eat the flesh of certain animals as stated in my former paper.¹ There were amongst the company some young men who had been initiated at previous Boras, and these now asked the old men to free them from certain restrictions as to food which had been imposed upon them at the Boras referred to. At the end of these ceremonies, or perhaps at intervals during the time they were going on, the men in the trees made noises like opossums, and micturated down upon the ground in imitation of these animals. They then descended from the trees uttering exclamations of regret that the Bora festival had terminated. All hands then lay down at their camp fire to rest for the night.

The following morning after breakfast the men and boys had the ends of their hair singed with small blazing pieces of stick²; the hair on their faces and other parts of their bodies being singed off altogether. The boys who had been kept painted red all over, during the whole of the time they had been in the bush, now had in addition, white stripes drawn diagonally across their bodies from the direction of each shoulder, and also lines of white on their arms and legs. They were likewise decorated in their newly acquired full dress of a man. The men were painted with red stripes from the waist downwards, and from the elbows to the hands. All men and boys had feathers of the eagle, hawk or swan fixed in their hair. A start was then made for the new camp, and one of the men went ahead to report that the boys would shortly arrive.

Return of the boys.—See the "Journal of the Anthropological Institute," vol. xxiv, pages 424 to 427. At p. 424, all the lines commencing with the word "The" in line 10, and ending with the word "come," in line 35, should be struck out.

A bough-yard, *thurrawanga*, had been erected near the new camp, as stated in my former paper on this subject.³ Around the outside of the convex end of this yard logs of wood had been laid, on which the novices would have to stand. Within this yard the mothers of the guardians and Koorungal had placed their yam-sticks around near the fence, about 2 or 3 feet from it, each stick having some article belonging to the owner attached to it, in order that the men might recognise them. The yam-sticks of the Dil'bi women were on one side of the yard and those of the Kup'athin women on the other.

The men and women belonging to the new camp, who are called

¹ "Journ. Anthropol. Inst.," xxiv, p. 426.

² "Journ. Anthropol. Inst.," xxiv, p. 424.

³ "Journ. Anthropol. Inst.," xxiv, pp. 424, 425.

collectively *moo'eemalla*, mustered near the bough yard some time after breakfast, and had bushes cut ready to lay over the women and children. When the messenger arrived stating that the men and boys were coming in from the bush, the women were placed lying down around the outside of the convex end of the yard, and were covered with rugs and bushes; the mothers of the novices, or those women acting in their stead, being nearest the fence with their heads against the logs before mentioned. As far as practicable, these women were placed on the side of the yard nearest their respective districts. The other women and the children were lying down a few yards farther away from the yard. When all was ready at the bough yard, a shout or signal was given, and the Koorinal, guardians and neophytes approached in single file, a bull-roarer being sounded by one of the *mooeemalla* men somewhere in the adjacent scrub. The Koorinal and guardians, carrying nothing in their hands, entered the yard and sat down on the ground behind the yam-sticks of their own or tribal mothers. Each boy was taken by the men to the outside of the enclosure and placed standing beside his mother on the log against which her head was resting. These arrangements are all carried out quickly, so as not to keep the women and children covered up too long. While the women are covered up, some of the men may pick up one or two of the little children, who cannot speak, and put a few marks of paint on them, to make the women believe that Dhuramoolan did it. When they were all in their places, the covering was taken off the mothers, who stood up with their heads bowed, and their eyes cast on the ground at their feet; each mother standing in this position, then held up her arms, and rubbed her hands on her son's breast and shoulders, symbolical of rubbing the red paint off him. Neither of them spoke. The boys then ran away to a camp, which had been prepared for them 150 yards southerly from the new camp.¹ The mothers turn their backs to the boys so as not to see them running away. The boys are not allowed to look behind them as they run.

All the women were then uncovered, and advancing, they pulled down the boughs forming the yard. The men rose to their feet and danced in the middle of the space within the yam-sticks, uttering guttural sounds or low shouts, the women standing all round them.

The women then took the men to a convenient place near the camp and divided them into Dilbi and Kupathin groups. Fires were then lighted on the windward side of them, and green bushes laid on the fire to produce a dense smoke, which

¹ "Journ. Anthropol. Inst.," xxiv, p. 425.

curled up around the men. The Dilbi women smoked the Dilbi men, and the Kupathin women the Kupathin men. This smoking only lasted a short time, after which the men went away to the boys' camp.

That night the neophytes, accompanied by some of the men, went close to the women's camp, and sounded the bull-roarers. The following day the boys, carrying in their hands a firestick, wrapped in green bushes to cause a smoke, were brought up to the women's camp, a bull-roarer being sounded somewhere out of sight. Some men walked behind the boys, throwing pieces of bark at them. The boys were placed sitting on a log, divided into groups according to their classes. The women, painted with a few stripes of red and white, were there, and proceeded to smoke the boys in the same manner as the men had been smoked the day before. The boys then went back to their own camp.

In a few days' time the boys were brought up to the women's camp and were smoked again in the same manner. The mothers tell their sons that when they wish to take a wife they must select a woman in accordance with the class and totem laws of the tribe. The women then go up close to the boys, and catching hold of them, put their mouths to their ears and sing out "*coor-r-r.*" This concludes the initiation ceremonies, but the boys are kept under the surveillance of their guardians and the old men for some time after their return to their own districts.¹

Conclusion.—The information contained in the preceding pages is entirely new, and is now published for the first time. Some omissions and errors of detail are almost necessarily incident to all original work of this character, but it is hoped that if any have been made in the present paper they will be found to be unimportant. Although I have made my descriptions of the various parts of the ceremonies as short as I could consistently with the clear exposition of the subject, this paper has already exceeded the limits I had assigned to it. It has not been thought necessary, or indeed desirable, at the present stage of the investigation, to enter upon the *raison d'être* of the ceremonies, or to discuss the meaning of the different performances which have been referred to. It is proposed to leave this part of the subject to be dealt with in a future article, and in the meantime I shall avail myself of every opportunity to extend my researches and collect further details in connection with the initiation ceremonies of the Australian aborigines.

¹ "Journ. Anthropol. Inst.," xxiv, p. 426.

JANUARY 7TH, 1896.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and confirmed.

The presents which had been received were announced, and thanks voted to their respective donors.

The elections of three new Honorary Members (Dr. HEGER, Dr. STOLPE, and Dr. DUBOIS) and three new Fellows (Dr. W. H. MARETT-TIMS, Mr. SPENCER BLACKETT, and Mr. C. S. MYERS) were announced.

The following communications were read :—

“Mourning and Burial Rites of Korea.” By Dr. E. B. LANDIS.
(Read by W. GOWLAND, Esq.)

“A Preliminary Notice of the Luchuan Language.” By B. HALL CHAMBERLAIN, Esq. (Read by A. L. LEWIS, Esq.)

MOURNING and BURIAL RITES of KOREA. By E. B. LANDIS, M.D., of the Church of England Mission to Korea; Medical Adviser to the Royal Korean Customs Service, Chemulpo; Corporate Member of the Buddhist Text Society of India, &c.

Mourning and Burial Rites.—These were collected and arranged by one of the ministers of the present dynasty Yi Youl Kok by name. They were put forth in the order given below, and the ceremonies are supposed to be observed in all houses where there has been a death. As a matter of fact, however, the poorer classes cannot afford all that the ceremonial demands, and a number of the minor items are omitted. The period of mourning, the dress of the mourner, and the sacrifices offered are all strictly carried out as below if possible. A man will sell his furniture or his house rather than neglect to offer sacrifices.



CHART SHOWING MOURNING FOR MATERNAL RELATIVES OR WIFE'S RELATIVES.

		Maternal grand- parents, five months.		
	Mother's sisters five months. Sisters of father's concubine five months. If father's concubine is dead no mourning for their sisters.	Wife's parents, for second or third wives' parents the same. If wife's mother should take a second husband the same, three months.	Maternal uncles five months, their wives, three months.	
Mother's sister's sons, three months.	Father's sister's sons, three months.	Myself.		Maternal uncle's son, three months.
	Sister's daughters, five months.	Son-in-law, three months.	Sister's sons, five months. Their wives, three months.	
<p>An adopted son for his own maternal grandparents, three months.</p> <p>If one's mother has been divorced and father has married again, for stepmother's parents, brothers and sisters, five months.</p> <p>For parents of father's concubine, five months. If father's concubine is dead no mourning for her parents.</p> <p>For maternal grandfather's concubine, five months. If mother is dead no mourning for grandfather's concubine.</p> <p>If a concubine's son transmits the line and hence acts as chief at the ancestral sacrifices he wears no mourning for his own mother's parents.</p>				
		Daughter's sons, three months. Their wives, three months.		

Rules for wearing mourning of various grades.

There are eight grades of mourning for adults, viz. :—

- I. *Cham Choi*.
- II. *Chai Choi* worn for three years.
- III. " " " " one year.
- IV. " " " " five months.
- V. " " " " three months.
- VI. *Tai Kong*.
- VII. *Syo Kong*.
- VIII. *Si Ma*.

I. *Mourning Clothes. Cham Choi*.—This is the deepest class of mourning. In this the garments are made of very coarse hempen cloth and unhemmed. The upper garments are called Choi, and the under garments are called Chi Ma. Hanging down in front from the shoulder is a piece of cloth, which is supposed to catch the tears as they fall. Behind is a wide piece of cloth hanging down from the collar to which it is attached; this is called the Pou Pau. It has a figurative meaning, and that is that the mourner trails his sad heart after him in the dust. On either side also are pieces hanging down from the arm-pits. These are called Pyeng Yeng. These indicate the sad heart of a filial child which should be downcast. Again Choi means that the heart is rent and torn, and Pou Pau that he is overcome with sadness. On the shoulder is a binding which is called Chyek, and which signifies that the filial son carries the thoughts of his parents always with him. On the left side covering the heart is also a piece of cloth which is fastened to the collar. It is worn for three years (in reality only twenty-seven months).

1. For one's father.
2. If a father has died before the paternal grandfather, when the latter dies, the first-born grandson wears it.
3. If father and grandfather die before the great-grandfather, when the latter dies the same rule is followed as in No. 2.
4. The father wears it for his first-born son. This is because of the break in the family line.
5. The wife wears it for her husband's father. As her husband wears it she must follow the example of her lord and master.
6. A wife wears it for her husband.
7. A concubine wears it for her lord.
8. A concubine wears it for her lord's father.

II. *Chai Choi*.—This differs very little from *Cham choi*, save that the garments are hemmed. It is also worn for three years.

1. For a mother.
2. A concubine's son for his own mother if there are no children by the lawful wife.
3. If the father is dead the first-born grandson wears it for his grandmother.
4. If the father and grandfather are both dead, the first-born grandson wears it for his great-grandmother.
5. For a step-mother.
6. A concubine's son, if his mother is dead, wears it for other concubines of his father.

7. For parents by adoption.
8. A woman wears it for her husband's mother.
9. A woman wears it for her husband's step-mother.
10. A mother for her first-born son (this is almost the only case in which a woman does not wear the same mourning as her husband).
11. A woman for her eldest stepson.
12. A concubine for her lord's mother.

III, IV, V. *Chai Choi* is also worn for one year, five months, and three months for more distant relatives according to kinship. The mourning garments are the same as when worn for three years but no staff is used.

VI. *Tai Kong*.—This is not deep mourning, and is only worn for nine months. The garments are like those of *Chai Choi* but of a finer texture.

1. For the sons of a father's brethren.
2. For grandchildren.
3. For son's wives excepting the first-born.
4. For wives of brother's sons.
5. A woman for her husband's grand-parents or great-grand-parents.
6. A woman for her husband's paternal uncles and their wives.
7. A woman for her husband's brothers' sons and their wives.
8. A woman for her husband's parents by birth. (If he has been adopted into another family.)
9. A woman for her first-born grandson.

VII. *Syo Kong*.—This is only worn for five months.

VIII. *Si Ma* for three months. The garments are in both cases like the preceding, but of still finer texture, and they are worn for still more distant relatives. *Si Ma* is also worn for intimate friends.

Mourning for Children.—For children the mourning is always one degree less than for adults. Mourning for children is divided into three classes.

First class. When the child is from sixteen to nineteen years old.

Second class. When the child is from twelve to fifteen years old.

Third class. When the child is from eight to eleven years old.

Under eight years of age no mourning is worn. For an infant under three months there is not even wailing.

If a boy or a girl has been betrothed, no matter what the age is, mourning is worn the same as for an adult. The grades are:—

Tai Kong, worn nine months for first class ; seven months for second class.

Syo Kong, worn five months for first, second, and third class.

Si Ma, worn three months for first, second and third class.

The grade and duration of mourning are determined by kinship.

Both a man who has been adopted into another family, and a woman who is married, wear for their parents by birth one degree of mourning less than they ordinarily would, and the same rule applies to the parents when their children die. If a wife, however, has been divorced she wears full mourning for her own parents. A divorced wife wears no mourning for her former husband's relatives.

The rules for mourning in the case of a concubine are the same as those of a legitimate wife. Besides the above there is another kind of mourning termed

Sim Sang.—This is best translated as secret mourning, or literally mourning in one's heart. The man or woman is a mourner, but no mourning apparel is worn. This is done for three years.

For example, if the mother dies during the father's lifetime, no mourning clothes are worn out of regard for the father. The same rule applies to a step-mother and in other similar cases. It is also followed for a teacher or friend for shorter periods.

In the case of high officials (who cannot be in office while they are in mourning) their period of mourning is sometimes lessened by royal decree. In this case one year's mourning is only worn for thirty days.

Nine months' mourning for twenty days.

Five months' mourning for fifteen days.

Three months' mourning for seven days.

Mourning for maternal grandparents, fifteen days.

Mourning for parents-in-law, twenty-three days.

When a person is at the point of death, he is removed to the lower part of the room, and the inmates of the household quietly sit around. New cotton is placed over the mouth and nostrils, in order to prevent the spirit from escaping. If the dying person is a man, all the male members of the household grasp his hand, and the entire family, male and female, wail together. If the dying person is a female, the female members of the household grasp her hand, while the entire family wails. The corpse is then covered with a blanket, the entire family still wailing loudly.

A member or servant of the family then takes the recently worn holiday clothes of the deceased and ascends to the house-

top. He faces the north (because the north is the region of darkness, and the abode of the shades), and seizing the collar of the garment in his left hand, and the belt in his right, he shakes it and calls loudly the name of the deceased three times. If the deceased is an official, his surname and official title are called. If he is not an official, only his surname and clan title. He then descends, folds up the clothes and lays them on the corpse. The man's name is called and the clothes shaken, thinking that the spirit may be induced to return. A temporary tablet is then made which is put in the folded clothing. At the time when the corpse is interred, these two are buried together.

The chief mourner and his wife take the leading parts in all the ceremonies following. The chief mourner is always the first-born son, or if the first-born son is dead, his first-born son acts, no matter what his age may be.

One of the relatives acts as master of ceremonies, another acts as secretary (for writing notices of death, &c., and sending to friends of the chief mourner), and still another as master of sacrifices.

Immediately after a person's death the chief mourner changes his clothing and must not partake of solid food for some days. He unties his hair and wails. His sons also with their wives untie their hair. The immediate members of the family and servants do the same. None of them dare wear shoes, but go about in their socks only. However, adopted sons or married daughters need not go as far as this.

The coffin is then prepared and the following articles are needed.

Fir tree resin, ten ounces; yellow wax, three ounces; to fill in the chinks of the coffin.

Varnish to cover the coffin.—If the family are poor and cannot afford varnish, ink may be used.

Black silk and paper to cover over all the cracks in the coffin.

Green or red silk to put in the four corners.

A board on which is made a diagram of the seven principal stars in the constellation *Ursus Major*. This board is covered with black silk. (The spirit deity which inhabits the "seven stars," is supposed to confer longevity.)

In encoffining the body the following articles are needed:—A curtain and screen; a low bed or couch. If there is no bed one of the doors of another room, or the gate of the yard can be used; a mat; a pillow; a coverlet or blanket.

The curtains and screen are so placed as to exclude the least draught of air. Then the mat is spread out on the bed. On this the corpse is placed with his head to the south and covered.

Preparations are then made for bathing the body, for which purpose the following articles are needed; two basins; perfumed water; two bathing towels for the head—one for the face and one for the hair. These are made of hempen cloth. Two bathing towels for the body—one for the upper, and one for the lower extremities. These are also made of hempen cloth. A comb and comb case; a hair ribbon of black silk; five purses, one for the nail parings of each hand and foot, and one for the hair which comes out in combing. (After the body has been bathed, the comb, towels, bathing water, and the pieces of wood or horn, which were placed between the teeth to prevent them from closing tightly, are buried.)

A belt.—If the man has been an official it is made of scarlet material. If he had not been an official it is made of indigo blue material. The material must be of silk and rather wide. For a woman it is made of scarlet silk.

Outer garments either the long sleeved holiday garments, or those garments which are worn by philosophers; a long wadded jacket; an undervest of silk with sleeves so long that they cover the hands; a suit of clothes of a single thickness; wadded trousers; wadded socks; head band; cap; pieces of silk to cover the face; pieces of cotton rolled up in the form of dates to stop up the ears; gloves made of red silk inside, and black silk outside; shoes made of black silk; rice, about a spoonful; pieces of *Haliotis* shell; three pearls; a spoon made of willow wood which is used for putting the rice into the mouth; a piece of hempen cloth two yards square to cover the face; a basin and towel used by the mourner to wash his hands.

In bathing the body the master of ceremonies will pour out the perfumed water into a basin, while the chief mourner retires outside the screen and wails. The master of ceremonies will then strip the body of its clothes. The hair will then be bathed and dried, and bound up into a top knot. The body will then be bathed and dried, and the nails pared. The body will then be covered by a blanket, while the master of ceremonies spreads out the clothing which is to be worn by the deceased. If the deceased had himself been a mourner, only white clothing is worn by him, and before burial no meats must be offered in sacrifice. This is because mourners must abstain from meat.

Materials needed for sacrifices to be now offered:—a high desk on which the tablet is placed; dried meat; prepared rice (this is prepared in a special manner and sweetened); wine; wine cups; candles.

The above things are then arranged in proper order on the sacrificial table. The chief mourner then washes his hands and

goes to the west of the sacrificial offerings and pours out wine. The chief mourner and the rest of the family will then wail. The chief mourner will then go to the north of the table holding the sacrifices and will be seated. The women of the household will sit to the west of the table. They must all be seated on very coarse straw mats. Those relatives, however, who do not wear *Cham Choi* or *Chai Choi* can sit on ordinary mats.

The chief mourner wailing loudly will bare his left shoulder. He will then wash his hands. The master of ceremonies will remove the pillow. The chief mourner will go toward the left around to the west side, and facing the east will uncover the face. He will then with the willow spoon place a little rice in the right side of the mouth. After this he will place a pearl in on the same side. The same process will then be gone through in the centre of the mouth. Afterwards again on the left side of the mouth. The chief mourner will again cover his shoulder and return to his straw mat. The master of ceremonies will then replace the pillow and entirely discard the cloth which covered the face. The head band of black silk will then be put on and the cap adjusted. The ears will now be stopped up and the face covered with another cloth. The shoes will now be put on followed by the remaining clothes, the belt and gloves in order. Then the body is covered by a coverlet. The three years' mourner must sleep beside the deceased. The one year mourner must sleep opposite the corpse. The other relatives can return to their homes.

For the sacrifices now offered are needed :—A high table for the tablet; bed and coverlet; clothes; table for the viands; brazier for incense; incense basin; food and wine; fruit; white grass cloth 3 or 4 yards; paper case for the tablet; flags made of red silk; face powder; pencil; glue made from deer horns; bamboo poles for flags.

All the above are gotten ready and the tablet placed on the desk. The bed is then spread out, and on this the clothes are put, and on top of these the tablet. In front of this the viands are arranged and incense burned and libations poured. (This must be done regularly just as if the man was alive and partook of the food. Basins with water and towels are placed every morning before the tablet.)

The flags are then fastened to the bamboo poles and set up on the right side.

If the deceased is an official his surname and title are written. If there is no title only the surname and clan. For a woman her husband's title is used, otherwise only her husband's surname.

The wrapping up of the corpse. White hempen cloth 20

yards; two coverlets. The old clothes of the deceased which are put into the coffin. Cotton; a piece of hempen cloth on which the body is laid as on a mat.

Libations of wine are first poured. The mourner can now tie up his hair which until now was hanging loose.

The master of ceremonies now wraps the corpse in the hempen cloth. The cloth is first wrapped transversely and then longitudinally. After this the upper clothes are put on. These must be put on upside down, or transversely, or any way excepting the right way. After this the mourner can put on his cap and belt.

The master of ceremonies now washes his hands and removes the corpse to a table or bed. The pillow is laid aside, and silken cloth is folded and wrapped around the head. The ends are folded and made to cover the shoulders. All the vacant space between the two legs is now filled with old clothes of the deceased. If there are not sufficient old clothes to fill up the vacant space cotton is used. The clothes which are now put on the top are all tied on the left side. (Ordinarily clothes are tied on the right side.) The ends must be carefully folded up. The coverlet is then wrapped around the corpse.

The face, however, is not yet covered, as the family may still wish to see their dead relative. The chief mourner and his wife then beat their heads on the ground and wail. The chief mourner must face the west, and his wife the east. If it is *Cham Choi* the chief mourner will again loosen his hair and bare his shoulder. But in any other degree of mourning this is not done.

After the operations of dressing have been completed, the relatives all take their proper places standing. The sacrificial meats and auxiliaries will now be brought in. The master of ceremonies will superintend. He will wash his hands and arrange the sacrificial offerings in proper order before the desk containing the tablet. Incense will be lit and libations poured. All the mourners (excepting the chief mourner) will prostrate themselves twice. The master of ceremonies will then cover the offerings with a cloth. The chief mourner and the members of his household, including servants and slaves, will then wail without ceasing.

The final preparations for coffining. The following are required:—Ashes made from rice husks, four or five quarts; thick white paper five or six sheets; mattress for putting inside the coffin; mat; pillow; white hempen cloth 20 yards; two coverlets. (Those which have been used before for covering the corpse may be used.) A suit of holiday clothes; oiled paper to wrap round the boards; fine cord

50 arms' length; thick cord 10 arms' lengths; three boards. (A small house may be temporarily built outside in which the coffin is placed until interment; or one of the rooms may be fitted up as a place in which to put the coffin.) Two low trestles on which the coffin is placed; a curtain; a covering for the coffin of silk or other material.

The final preparations for confining are gone through on the day following the wrapping up of the corpse. The master of ceremonies spreads out the mattress, pillow and coverlet. (It should be noted that in these ceremonies all is done that would be done if the man was alive. The wash basin and towel, the comb and the bed all prepared.) The servants then bring in the coffin and place it in the middle of the room. The master of ceremonies will now spread out the ashes evenly on the floor of the coffin. (This is for the absorption of the juices of the body.) On the ashes are put the thick white paper and on this the 7 star board. On this the silk mattress is laid, and the pillow put in position. Then the wrappings for the body with the ends hanging over the side of the coffin, and after this the coverlet in which the body is wrapped. Finally, a suit of official robes are put in.

Then the master of ceremonies and the sons of the deceased will together raise the body and place it in the coffin. The body will now be wrapped up, beginning with the feet. After the feet, the head is wrapped up, then the coverings on the left side are folded in, and lastly the coverings on the right side. Then the purses with the nail parings will be put one in each corner of the coffin, and the purse with the loose hair will also be put into the coffin. If there are any vacant spaces remaining these are filled in with the clothes of the deceased. Lastly, the silk covering is placed over all.

The chief mourner and his wife will then wail loudly. The wife will then retire to her own apartments, and the servants will then put on the coffin lid and nail it down. The coffin will then be removed to the room which was occupied by the deceased when alive. Flags will be raised on each side of the room and sacrifices will again be offered. Then all will again wail.

The master of ceremonies will then wash his hands and pour out libations. Incense will also be burned. All will then wail, and with the exception of the chief mourner will prostrate themselves twice.

The relatives can now all return to their homes, and from this time the servants will cease mourning. Any hired mourners will cease also from this time.

The mourner will then get ready his own proper mourning clothes, hat and staff. (Staff for *Cham choi* of bamboo, for *Chai choi* of eleococcus wood.)

The day following this, all the five grades of mourners will put on their appropriate apparel, and entering the room where the coffin is placed, each will take his proper place. The chief mourner will enter before breakfast and wail. (During the times the deceased usually partook of food the mourner will enter and wail. This shall be done until burial takes place.) From this day on the chief mourner and his brethren can partake of gruel (before this they were only supposed to partake of congee or rice water).

Every morning before daybreak the chief mourner will enter the apartment where the coffin is placed and wail. At the time when the deceased usually arose, the master of ceremonies will take in a basin of water, towels and the materials for dressing the hair, which shall be offered to the spirit.

The master of ceremonies will then place the tablet on the desk and take off the coverings. Vegetables, fruit, dried and raw meats will then be offered. The master of ceremonies will then wash his hands and pour out the wine, during which time the chief mourner wails loudly.

During the time when food is offered, morning and evening after the libations are poured, the spoon will be placed in the bowl of rice on the right side (because the man is supposed to take the spoon in his right hand). The chopsticks will be placed in position. The chief mourner then prostrates himself twice and wails. He will then rise and leaning on his staff will wail. This ceremony is gone through regularly every morning and evening until interment.

At the time when the deceased usually retired, the chief mourner will again enter and wail. During the day the chief mourner must wail incessantly.

Before interment, sacrifices are offered to the spirits of the hill where the grave is to be, and there is needed seven stakes to mark boundaries; a superintendent of sacrifices; an attendant (these two are chosen from amongst the relatives of the deceased); two mats (one on which the table of offerings is placed, and one on which the relatives prostrate themselves); sacrificial wines and meats; incense and burner; a prayer table.

On the day appointed, the master of sacrifices will proceed to the place with the chief mourner to take up the sod. The chief mourner will be wailing all the while. The attendant and geomancer will then put in the stakes one at each corner of the grave, one at the head, one in the centre, and one at the

foot. The master of sacrifices will then proceed with the attendant to the centre stake and will spread out the offerings. They will face the south and pour out the libations. They will then face the hill (the attendant behind the master of sacrifices) and prostrate themselves twice. Then washing their hands, they will light the incense and pour out libations on the earth. They will again prostrate themselves twice and again pour out libations, this time to the spirits of the grave. The master of sacrifices will then go to the left, and facing the east will recite the following prayer: "— (year) — (month) — (day) — (cyclical day) — (name of master of sacrifices) begs the spirits of the hill that they may aid and assist — (name of deceased) who is to have his final resting-place here. Therefore pure wine and fruits are reverently offered." He will then prostrate himself twice and the offerings will be removed. The chief mourner will then announce to the spirits that preparations for burial will be made, and will prostrate himself twice, wailing all the while.

If the burial place is the ancestral burial ground, a few libations of wine are poured to the spirits of the other graves and offerings of fruit are made.

The grave is then dug. At the bottom of the grave is a smaller cavity. This is filled with lime and water. If the family can afford it oil is used instead of water. This makes a hard cement and is intended to keep out worms. The mixture consists of 2 parts unslaked lime with 1 part of yellow earth, the whole mixed with sufficient water or oil.

For the procession to the grave there is needed: a hearse; four fans (on two of which clouds are painted and on two are painted a phoenix); one piece each of black and red silk as a present to the spirits of the hill; a blank tablet with writing materials; a small house and case for the tablet; a mat or cushion on which the tablet rests; 15 yards hempen cloth for the bottom of the grave beneath the coffin; pine boards to cover the coffin; a cloth towel 3 yards long which is carried on the end of a pole; four lanterns, two to be carried in front and two behind; a small sedan chair in which the spirit rides to the grave; sacrificial desk; table for offerings; a shade to screen off the sun's rays from the hearse; mat; a screen.

In the morning of the day before the interment, food is offered as usual, incense is burned, and libations poured. Then the attendant will place the tablet on the desk and fruits will be again offered and libations poured; the master of sacrifices will then kneel and announce to the spirit that on a "fortunate day it is proposed to remove the coffin." The chief mourner then wails loudly. The coffin is then taken to the ancestral

temple to bid farewell to the spirits of the ancestors. (This was the ancient custom, but at present the tablets and flags are taken instead of the coffin.) When the door of the ancestral temple is reached sacrifices are again offered while the chief mourner wails loudly.

On the evening before the interment, food is offered as usual. Afterwards the attendant washes his hands, and taking wine from the hands of the chief mourner, offers it up; then incense is lit, and it is announced to the spirit that, "the proprieties of the final and everlasting removal will admit of no delay, therefore it is proposed to remove the coffin to its carriage, thus carrying out the instructions left by the ancients." Then the chief mourner prostrates himself twice and wails loudly.

The next day, before the coffin is placed on the hearse, the attendant removes all the sacrificial vessels, and facing the north says, "We now presume to announce that the coffin will be placed in the hearse, and we will depart." After the coffin is placed in the hearse, sacrifices are offered facing the south.

The attendant will then take the prayer-desk and tablet, and proceed to the street in front of the house, where sacrifices are again offered, and libations poured. Incense will also be lit, and the following announcement is made by the master of sacrifices: "The spirit in its car and the coffin in the hearse will now proceed to its peaceful home; we, thus completing the everlasting proprieties, and bidding it until Heaven ends, a last farewell." The attendant will then put the tablet in the small carriage reserved for it, and precede the hearse in going to the grave.

On reaching the place of burial, sacrifices are again offered in front of the coffin. The desk is placed in position. On the south side of the grave the attendant will spread out a mat. The coffin will be placed on this with its head to the north, and the chief mourner going to the east side will bow down and wail.

The coffin will now be lowered into the grave carefully, quietly, and evenly. During this time the mourners must not wail. The coffin is then covered with a mattress, and over this the flags are spread out straight and evenly, and again on top of this the four fans. (At present the fans are sometimes dispensed with, drawings being made on the coffin lid instead.) In the grave are then placed the pieces of red and black silk which are a present to the spirits of the hills. Then all the mourners will prostrate themselves, and while prostrate will wail. Pine wood boards are then placed on the coffin, and on the boards, paper. The grave is then filled in with a mixture of earth and lime,

the whole being stamped in firmly. Then sacrifices are again offered, and the tablet is taken back to the house.

The sacrifices to the spirits of the hill and grave.—A small space of ground is leveled and at the head is put a small tablet, inscribed, "The spirits of the ground." The offerings are arranged and libations are poured. Then the master of sacrifices faces the tablet with the attendant behind him. They both prostrate themselves twice. Then the master of sacrifices washes his hands, lights the incense, and kneeling, pours out libations on the ground. The attendant again fills the cups, and places them in front of the tablet. They then go to the left, and, facing the east, the master of sacrifices says: "— (year) — (month) — (day) — (name of master of sacrifices), presumes to assist in making the spirits of the earth glorious — (name of deceased) is being buried here. Will you aid and watch over this grave, so that in the hereafter no difficulties will arise. We reverently offer wine and fruits and meats to you." They then again prostrate themselves twice.

The permanent tablet.—The tablet is made of chestnut wood, and covered over with a powder, which is obtained from the inside of the seeds of the *mirabilis dichotoma*, mixed with glue made from deer horns. There are really two tablets.

The master of sacrifices then says, "— (year) — (month) — (day) — (cyclical name of day) the lonely one — (name of chief mourner), wishes to reflect the brightness of the District Lord (the deceased) who has come from the shadow of the grave to the tablet, wilt thou now come from thy old residence and thy spirit lean for dependence in the new tablet."

The attendant then places the tablet on the desk and arranges the offerings. Writing materials are also placed on the desk. The master of sacrifices then washes his hands, and a good penman then writes on the back tablet first, "— official title — (surname Kong (公) — (personal name) —'s (name called by friends) tablet." (It must be remembered that a man's personal name is not called by anyone in the owner's presence, but he is always called by a substitute or nick-name. The tablet placed in front has then written on it the following:—"The tablet of the Manifested Father and Lord of the village." Below and to one side is written "— (name of chief mourner) a filial son offers sacrifices." When all is written, offerings are made. Then the new tablet is removed to the desk. The old tablet on its desk is then placed behind the new one, and the attendant burns incense and pours out libations. The chief mourner kneels opposite the tablets. The master of sacrifices kneels to the right and recites the above for the spirit to leave the old tablet for the new. The chief mourner then wails. During the entire

time of mourning from this time forth there is a special room set apart for the residence of the tablet and desk and for the sacrifices. The chief mourner and his assistants can now return to their own rooms. The old tablet is then taken and buried in front of the grave.¹

From this time a one year's mourner may eat meat and drink wine, but these are not allowed a three years' mourner.

Sacrifices after Interment.

First sacrifices on the day of burial.

Second sacrifices on the "Yih," "Ting," "Ki," "Sui," and "Kwei" ² days, following the first sacrifices.

Third sacrifices on the "Kia," "Ping," "Wuh," "Keng," and "Jen" days following the second sacrifices.

The cessation of wailing sacrifices on the "Kia," "Ping," "Wu," "Keng," and "Jen" days following the third sacrifices.

The sacrifices offered to all the ancestors on the day following the cessation of wailing sacrifices.

The sacrifices of small luck on the first anniversary of the death.

The sacrifices of great luck on the second anniversary of the death.

The final mourning sacrifices, three months after the last.

The first sacrifices.—A white earthenware or brassware basin of clean sand is obtained, in which a plant of *Imperata Arundinacea* is planted. The master of sacrifices then recites the following "— (year) — (month) — (day) — (cyclical name of day) the lonely one — (name of chief mourner) presumes to make clear and manifest — (name of deceased). The days and months do not tarry."

The master of sacrifices will then open the case which contains the tablet and remove the tablet to the desk. Then the chief mourner who remains outside will lean on his staff and wail. Then all the relatives enter and take their proper places in front of the tablet, the chief mourner being nearest the tablet, and all the relatives arranged in the order of their nearness of relationship to the deceased. They all wail.

The chief mourner then ceases wailing, washes his hands,

¹ After the interment of the body the chief mourner did not wait until the grave was finished, but accompanied the tablet home, leaving a trusty person to see that the grave is properly sodded, &c. When he approached the house he wailed, and when he reached the doorstep he wailed. When he entered the house the master of sacrifices received the tablet and removed it to the room set apart for it. The condolers then entered and offered condolences to the chief mourner.

² Cyclical terms by which days, &c., are distinguished in Chinese chronology.

kneels, burns incense and prostrates himself twice. The attendant then pours wine into the cup and hands it to the chief mourner, who with one cup of wine pours thrice on the sand in the dish. (The spirit is supposed to know the wine by its odour and descend.) He then returns the wine cup to the attendant, and prostrating himself twice returns to his hut outside and wails.

The sacrifices are then offered.

In the first libations the mourner will kneel opposite the censer. The attendant will then take empty cups and pour wine therein, and kneeling will hand it to the mourner, who will pour thrice on the sand, and will then return the cups to the attendant, who will refill them and place them before the tablet. The chief mourner will then retire a little back and the master of ceremonies will then kneel and recite the above prayer for the descent of the spirit. During this time the mourner ceases wailing. After all is finished he will wail and all present will prostrate themselves twice. The mourner will then retire to his hut, and leaning on his staff will wail.

In the second libation, the wife of the chief mourner or the nearest relative after the chief mourner will go through the same ceremonies excepting that as they have no hut to retire to, they go to their own rooms. The third libation is poured by either the son or nephew of the chief mourner, who goes through precisely the same ceremonies.

In the offerings of food, first a little wine is offered and the spoon and chopsticks placed in position, also a pipe and tobacco. Then all will leave the room, closing the doors and keeping as quiet as possible. They remain outside for a time which is sufficient for eating. Then the chief mourner enters and wails. The attendant will then remove the soup dish and place a few spoonfuls of rice in the congee. Then the dishes are all covered and the master of the ceremonies says: "The ceremonies have been completed." The tablet is then removed to its case. The mourner wails, prostrates himself, and announces his departure. The food is now removed. In all the other sacrifices the ceremonies are the same as the above.

The Cessation of Wailing Sacrifices.—In these water is substituted for wine as a reminder of ancient times when there was no wine.

The Sacrifices of Small Luck.—Until this time the mourners' clothing has not been washed. For this sacrifice, clean clothing is put on, and the belt is changed for one of finer texture. After this sacrifice the morning and evening wailings cease, and wailing is only done at stated times. Until this time the chief mourner was supposed to abstain from fruit and vegetables, his

diet only consisting of the meanest fare. But from now on he can partake of fruit or vegetables.

The Great Luck Sacrifices.—The chief mourner now discards his large mourner's hat, his white shoes, and his hempen belt and clothes. Instead, he wears an ordinary hat as other men do, only white instead of black, and plain white clothing. After the ceremonies are completed, the chief mourner takes the tablet and places it in the ancestral temple. On the way to the ancestral temple he wails without ceasing until he arrives opposite the door, when he ceases. The room which was formerly occupied by the tablet and in which sacrifices were offered, is now emptied of the mourning and sacrificial accessories, and these with the mourner's clothing are burned.

The Final Mourning Sacrifices.—After this a black hat and black belt are worn instead of the white clothing. It is performed in an ante-chamber in the ancestral temple where the tablet has been temporarily removed. Until this time the chief mourner could not partake of either wine or meat. But after this sacrifice he can partake of any food he chooses.

In the ancestral temple, sacrifices are only offered to four generations of ancestors. On the day following the last sacrifices the announcement is made in the ancestral temple of the entrance of the new tablet.

As a new pair of tablets have been added, the oldest pair of tablets must be buried. Before steps are taken for doing this the following announcement is made—

"To our ancestor of the fifth degree — (name and title) we now announce with sorrow which overcomes us, that the time for mourning for our father is now completed, the proprieties demand that thy tablet be removed, and although we do it against our will, yet the proprieties demand that sacrifices be offered to four generations only, and therefore we will remove thy tablet and inter it. We being overcome with sorrow, offer wine, fruits, and meats, and with a hundred prostrations bid thee farewell. Wilt thou deign to accept our offerings?"

On the addition of the new tablet the following announcement is made to the tablets in the ancestral temple—

"— (year)— (month)— (day) — (name of sacrifices) although we have committed sins worthy of death, yet we have not died, but our father having died in our stead, we have completed the three years' mourning. The proprieties dare not be altered, therefore we change the grades of the tablets. We offer wines and fruits, and meats. Will you deign to accept them?"

To the new tablet the following announcement is made: "We — (name, title, &c.) wishing to reflect our father's glory, and although we would mourn yet longer, the proprieties place a

limit to the time of mourning, and in accordance with these proprieties, we are compelled to place the tablet in the ancestral temple. Therefore with reverence we offer wines and meats and fruits. Will you deign to accept them?"

The removal of the body to another grave.—First a new site for a grave is chosen. Then a new coffin is made, and clothing and blankets prepared as in the first instance. Si Ma mourning is worn on this occasion. The spirits of the hill where the new grave is situated are then appeased by offerings, and the following announcement is made :

"— (year) — (month) — (day) — (name of the person offering sacrifices) wishing to make glorious the shades of his ancestor — (name of deceased), and the grave not being peaceful or fortunate, it is proposed to remove it to this place; will you spirits of this grave assist us, so as to avoid any difficulties in this great undertaking. We therefore respectfully offer you pure wine and fruits."

The grave is then dug as in the first instance. The chief mourner then goes to the ancestral temple on the day before the removal of the grave, and offers sacrifices for the descent of the spirit as in the three sacrifices, and prostrating himself twice makes the following announcement :

"— (year) — (month) — (day) — the filial son — (name of mourner) announces that the grave of — (name of deceased) not being peaceful, and fearing that calamities may befall the family on that account, proposes to remove the grave on — (day) of — (month). Thy spirit must not be disturbed or frightened by the noise and shaking. We therefore make this announcement."

The chief mourner will then prostrate himself and retire. While the servants are digging the new grave, he dons his mourning garments and wails.

At the old grave sacrifices are offered, and an announcement made to the spirits.

When the remains are dug up, sacrifices are again offered, and the following is recited :

"— (year) — (month) — (day) the ceremonies of interment were completed, but the grave has not been peaceful. We now propose to give the spirit peace by again performing the ceremonies. With prostrations we beg you not to be frightened."

The remains are then dug up, and removed to a place set apart for their reception, and for the ceremonies attending the offering up of sacrifices. As the remains are removed from the grave, they are carefully cleansed and placed in the new coffin with the same ceremonies as at the first interment. Sacrifices

are offered as well. The coffin is then removed to the new grave with the same ceremonies as before.

Sacrifices to the spirits of the new grave.—The attendant places all the offerings in proper order in front of the grave, and after washing his hands, will kneel, light incense, and prostrating himself twice, will invite the spirits to come and partake of the offerings. He will pour libations on the ground, and refilling the cups will say :

“—(year)—(month)—(day)—(name of person offering sacrifices) wishing to reflect the glory of the spirits and making the grave of —(name of deceased) here, begs you to aid him, and through him aid us, causing all difficulties to disappear. We therefore offer wine and fruits. Will you deign to accept them?”

The attendant and master of sacrifices will then both prostrate themselves twice.

Sacrifices will then be offered to the spirit of the deceased. The mourners will all go to the place set apart for offering sacrifices, and taking their proper places will wail. They will then kneel and the master of sacrifices will say :

“—(year)—(month)—(day) the filial son —(name of chief mourner) proposes to again perform the ceremonies of interment and begs the spirit not to be frightened or startled. Since the first ceremonies have been performed he has had no peace, and therefore overcome with sorrow, he reverently offers up wine and several kinds of food.”

Then the first, second and third sacrifices are offered as before. The chief mourner then returns and makes the announcement in the ancestral temple that the ceremonies have been completed. The day after this he goes to the ancestral temple and opens the tablet cabinet, and then goes through the ceremony of inviting the spirit to descend. He then says :

“—(year)—(month)—(day) the filial son —(name) makes his parents' —(name) glorious. They were originally interred in an unlucky place, and now in —(year)—(month)—(day) in (name of place of burial) he has corrected this by re-interring them. The ceremonies now having been completed, he, offering wine and fruits, sincerely and reverently makes this announcement.”

After the sacrificial ceremonies are concluded the tablets are returned to their cases. After three months the mourning garments are discarded.

Re-sodding the grave.—A fortunate day is chosen and the attendant will spread out a mat in front of the grave and arrange the offerings and sacrificial vessels. The master of sacrifices will then wash his hands, and kneeling will light the

incense and pour out the libations thrice on the ground, inviting the spirits to come and partake. He will then pour out wine into the cups and say :

“— (year) — (month) — (day) the filial son — (name of chief mourner) prostrates himself and says, that before, the grave was not properly completed and therefore the sodding has perished. It will now be repaired, and prostrate he begs that the honourable spirits will not be startled and frightened. Therefore with wine and various kinds of food he reverently makes this announcement.”

Then he offers sacrifices to the spirits of the grave and says :

“The grave of — (name of deceased) having gone to ruin, we propose to repair it, and we beg of you that you will watch over it and remove in future any misfortunes which threaten it. Therefore we reverently offer unto you wine and fruits. Will you deign to accept them?”

After the grave has been repaired sacrifices are again offered and the master of sacrifices says :

“— (year) — (month) — (day) the grave having fallen into decay we have repaired it. Prostrate we pray that the honourable spirits may now rest in peace for ever.”

Then if the family can afford it flat stones are placed in front of the grave, and when this is done sacrifices are again offered as before, and the master of sacrifices says :

“— (year) — (month) — (day) the filial son — (name) begs to announce that his poverty before not having permitted him to complete the ceremonies, he now prostrate says that he has prepared flat stones and grave stones in order to set a mark upon the grave, and he prays that the spirits may now rest in peace.”

Food proper for sacrifices for special seasons.

New Year's Day.—White bread; fruits preserved in honey.

15th day of the first moon.—Rice mixed with fruits and nuts.

Third moon.—Bread with nuts inserted.

3rd day of the 3rd moon.—Bread mixed with the leaves of *Artemisia vulgaris*; azalea petals preserved in honey.

Summer solstice.—Bread mixed with bitter herbs.

15th day of the 6th moon.—Soup made of bread; native brandy.

9th day of the 9th moon.—Bread mixed with chrysanthemum flowers; wine made of chrysanthemum flowers

Winter solstice.—Pea gruel.

25th day of the last moon.—Fish rolled in millet soup.

The offering of first-fruits.

Grains :—

Autumn barley.—5th or 15th day of the 15th moon.

Early rice.—7th or 15th day of the 7th moon.

Panicled millet.—15th day of the 7th moon or 1st day of the 8th moon.

Millet.—When it is first harvested.

Beans.—When they are first harvested. Fruits are offered when they first ripen, and fish and vegetables when first in season.

On the first day of each moon, sacrifices are offered in the ancestral temple.

On the last day of the month, the ancestral temple will be thoroughly cleansed, and the head of the house will, early on the morning of the first day, arise and bathe and go to the ancestral temple. He will get out the dish of sand with the plant in it, and place it in position and also the censer and incense. He will then offer up fruit and wine. He will then open the tablet case and will bow low and return to his proper place. He will then pour out libations for the descent of the spirit as before. He will then light the incense kneeling, and afterwards prostrate himself twice. He will then pour wine into the cups kneeling, and again prostrating himself twice, will retire. All the above ceremony is for the descent of the spirit. Then follows the offerings to the spirits. The relatives present will all prostrate themselves twice, and the head of the family will take the bottle of wine and pour out a cup for each of the tablets. He will then prostrate himself twice and return to his proper place. When the offerings are set out and arranged, spoons and chopsticks are of course placed in position. The relatives all wait quietly a short time in order to allow the spirits to partake of the food. The head of the clan then prostrates himself twice and replaces the tablets. The sacrificial offerings are then removed.

Holidays on which sacrifices are offered (in addition to those mentioned above).—5th day of 5th moon; 7th day of 7th moon; 15th day of 8th moon.

Confucian doctors are supposed to enter the ancestral temple every morning, prostrate twice, light incense, and then retire.

In the offerings of first-fruits, the fruit should not be eaten until after an offering has been made in the ancestral temple.

If anything special occurs, such as an appointment to office, or passing an examination, or removing to another place, or the

birth of a son, but not of a daughter, it should always be first announced, and offerings should be made.

In the sacrifices on the anniversary of a death the sacrifices are not offered in the ancestral temple, but the tablet is temporarily removed to a room in the house. Before the tablet is removed, an announcement to that effect is first made in the ancestral temple. The tablet is then removed to the room set apart for the sacrifices, and the same ceremonies are gone through as at sacrifices in general. On the two days before the sacrifices no meat must be eaten, neither must any dirty labour of any kind be performed, nor must any sickness be discussed, nor anything of a similar kind be done. The ancient custom required the above abstentions for a period of three days, but they are now generally observed only for one or two days. When sacrifices are offered, if the family neither have nor can afford to purchase wine, water may be offered instead. Even when wine is offered, the jar of water is placed beside the table of offerings.

At the grave sacrifices are offered on New Year's Day; Vernal equinox; 5th day of the 5th moon; 15th day of 8th moon. In any of the sacrificial offerings peaches are not used. This is because peaches are the fruit of the gods.

The mourner's staff on which he leans must have six joints.—All mourners from the Tai Kong upward must cease their occupations. They can study the classics if they so like, but must not study poetry. Any reference to music or enjoyment of any kind must be avoided. The mourner must not see his wife frequently, as if he does he will forget his sorrow. He must avoid seeing things which give pleasure, or gaining, or seeing useless friends. He must not speak in a loud voice, nor scold, quarrel, or fight. If anyone insults or even strikes him he must overlook the fact. If he has a warm room he should think of his parents in the cold grave. When he partakes of food he must think of his parents who are unable to do so. When he sees friends, he must think of his parents who are unable to see friends. In whatever he does, he must always think of his parents who are in the grave.

NOTES on the ANDAMANESE. By M. V. PORTMAN.

SINCE the publication of Mr. Man's book on "The Andaman Islanders" in 1883, which at that time was the only reliable source of information regarding these savages, so much has been added to our knowledge of them, that the following notes to

accompany that part of my record of the Andamanese which is complete may not be uninteresting.

Mr. Man dealt almost entirely with what is now known as the South Andaman group of tribes, and principally with the Áka-Béa-da, and Puchikwár tribes, whereas we have since established friendly relations with the remainder of the tribes on the Great and Little Andaman, excepting always those small bodies of people known as the Járawas.

After a careful study of the social and inter-tribal relations of the different tribes, of their weapons, canoes, ornaments, and utensils, and of their languages, I find that they may be divided into three groups, the tribes in each group being more or less on friendly terms, using similar weapons, utensils, &c. and having allied dialects and intonation of speech; the three groups, however, being in a perpetual state of hostility, and differing in many ways from each other.

These groups are:—

The North Andaman group of tribes, comprising the Ti Chári, the Tá Yéri, the Tá Jéru, and the Tá Kédé, or Kéda, who use the same bow, the “Chokio,” the same kind of ornaments, make comparatively small arrows, have the same system of tattooing, and whose languages are closely allied.

They inhabit the country from Landfall Island to a line drawn through the Middle Andaman from Flat Island on the west coast, to Ámit-lá-Téd on the east coast.

The South Andaman group of tribes, comprising the Áka-Béa-da, the Ákar-Balé, the Puchikwár, the Okko-Juwai, and the Kol tribes, who use the same bow, the “Karama,” the same kind of ornaments, make similar large arrows, have the same system of tattooing, and whose languages are allied. They inhabit the remaining portion of the Middle Andaman, and most of the South Andaman and adjacent Islands, to and including Rutland Island.

The Öngé group of tribes comprising the Öngés of the Little Andaman, the people in the interior of Rutland Island, the tribe in the interior of the South Andaman, and the tribe on the North Sentinel Island.

These people have similar ornaments and utensils, use a kind of bow differing from both the “Chókio” and “Karama,” make a different pattern of canoe, do not tattoo themselves, and their languages are allied.

The people on the North Sentinel Island are still hostile, but recent work there has shown them to be the same as the Öngés of the Little Andaman.

Until we established friendly relations with the Öngés, all the tribes in this group have been known to us as the Járawas, a

word of doubtful origin. The two "Járawa" tribes, one in the interior of the South Andaman, and the other on Rutland Island, differ from the Ōngés in that they have very long and thick bows, do not make canoes, and have a language of their own. Still I have no doubt that they were originally of the same tribe, and had become separated at some very distant period.

It is remarkable that these Járawas are the only tribes with which we have been unable to become acquainted, while those in the South Andaman were the only tribe of Adamanese with whom the early settlers in 1790 were on friendly terms, as is shown by Lieutenant Colebrooke's very interesting and accurate description of them in 1794.

He states that they call themselves "Mincopies," and on this report the Andamanese as a body have been described a "Mincopies," a term which has much puzzled more modern inquirers. The fact of the Járawas and the Áka-Béa-da, their nearest neighbours, being actively hostile will account for their conduct, as a person friendly with one tribe would be at enmity with the other.

The tribes forming the South Andaman group are distributed geographically as follows.

The Áka-Béa-da inhabit the coast of Rutland Island; the coast and part of the interior of the South Andaman south of a line drawn from Port Mouat to Port Blair; Termugli and the other islands south of Port Mouat; the coast and most of the interior of the remaining portion of the South Andaman; Bluff and Spike Islands; and the west coast of the Middle Andaman up to Flat Island.

The Ákar-Bálé inhabit the Archipelago Islands.

The Puchikwár inhabit all the country between Middle Strait and Homfray Strait, including Colebrooke, Passage, and Strait Islands; and the northern bank of Homfray Strait for a short distance inland.

The Okko-Juwai inhabit most of the interior of the southern half of the Middle Andaman.

The Kol inhabit the coast and part of the interior of the east side of the Middle Andaman between Ámit-lá-Téd and Párlób.

Some of these tribes are also subdivided into septs, each sept having a separate headman, but all speaking the same language.

The Áka-Béa-da tribe is subdivided in seven septs.

- 1st. The people inhabiting Rutland Island, and the coast and islands on the west side of the South Andaman up to Port Mouat.

- 2nd. Those on the west coast between Port Mouat and Port Campbell.
- 3rd. Those on the west coast between Port Campbell and Spike Island.
- 4th. Those on the west coast of the Middle Andaman between Spike Island and Flat Island.
- 5th. Those on the east coast of the South Andaman between Chiriya Tápu and Port Blair.
- 6th. Those on the northern half of Port Blair harbour, the interior of the eastern side of the South Andaman, and the east coast up to Lekera-Bárnga.
- 7th. Those on the east coast from Lekera-Bárnga to the Middle Strait.

The Akar-Bálé are subdivided into the North and South Archipelago tribes, who speak different dialects, the division being between Havelock and Lawrence Islands.

The Puchikwár are subdivided into :—

- 1st. The people living between Middle Strait and the North end of Colebrooke Island.
- 2nd. The people living on both banks of the east end of Homfray Strait.
- 3rd. The people living on both banks of the west end of Homfray Strait.
- 4th. The people living at Párlób and Long Island.
- 5th. The people living in the interior of the Middle Andaman north of Homfray Strait.

The Okko-Juwai and Kol tribes have no real subdivisions.

The Andamanese are also divided, irrespective of tribal divisions, into: the Áryāūto, or coast-dwellers, and the Éremtága, or Jungle-dwellers. (These names of course vary in the different languages, but the meaning is the same throughout, and the above words in the Áka-Béa-da language will be used for convenience sake with reference to all the tribes.) Many tribes contain members of both these divisions.

In the South Andaman group of tribes, those Áka-Béa-da living between Port Blair harbour and the Middle Strait, in the interior of the South Andaman, are Éremtága. The remainder are Áryāūto. All the Akar-Bálé are Áryāūto.

Those Puchikwár living in the interior of the Middle Andaman north of Homfray Strait are Éremtága. The remainder are Áryāūto. All the Okko-Juwai are Éremtága. All the Kol are Áryāūto.

The principal differences between Áryāūto and Éremtága are:—

The former residing chiefly on the coast, and obtaining

their food principally from the sea, are more expert as swimming and diving, fish shooting, &c., have a better knowledge of fishes and marine life, and are hardier and braver than the Éremtága.

These latter are more expert at tracking, or finding their way through the jungle, at pig hunting, &c., have a better knowledge of the fauna and flora of the Andamans than the Áryāūto, but are timid and more cunning.

They are unable to harpoon turtle and dugong, and thus, while the Áryāūto can do all that the Éremtága can do, though often not so well, in addition to his own peculiar accomplishments, the Érematága is ignorant of much which the Áryāūto knows.

Fights take place between sub-divisions of the same tribe, and between Áryāūto and Éremtága of the same tribe, who do not mix together much. Éremtága and Áryāūto of the same tribe are allowed to intermarry.

An Andamanese belongs to a tribe, and is also Áryāūto or Éremtága, by descent. A child of one tribe may become a member of another by adoption, and occasionally the child of an Éremtága may be brought up an Áryāūto, but an Áryāūto never becomes an Éremtága, the former despising the latter.

The North Andaman group of tribes comprises:—The Kédé or Kéda, inhabiting the northern half of the Middle Andaman and Interview Island. This tribe is composed of both Áryāūto and Éremtága. The Jéru, inhabiting the northern extremity of the Middle Andaman, and the interior and southern half of the coast of the North Andaman. This tribe is composed of both Áryāūto and Éremtága, but principally of the latter. The Cháriár, inhabiting the coast of the northern half of the North Andaman, and the adjacent islands. This tribe is composed of Áryāūto only, and the name may be derived from the word in their language signifying “sea”—Chári-i.

The Kédé tribe, though generally at feud with its neighbours of the South Andaman group, shows in names and some customs a resemblance to the tribes of that group, and the fusion between the groups, which is slight, has taken place between the Kédé and Kol tribes on the east side of the Middle Andaman, and the Kédé and Okko-Juwai tribes on the west side.

The members of the North Andaman group of tribes show, in many instances, a decided reddish tinge over the face and prominent parts of the body. Among the groups, the Ōnges are much the fairest, the north Andaman group being darker, and the South Andaman group the darkest.

In features, build, and gait, the members of this group

resemble each other, but differ slightly from the people of the other groups. Anyone accustomed to the Andamanese could distinguish a member of the Cháriár or Jéru tribes at a glance.

The people of the North Andaman group of tribes are slightly more platyprosopic than those of the South Andaman group.

The Öngé group of tribes comprises:—The Öngés on the Little Andaman Island, who do not seem to have the distinction between the Áryāūto and Éremtága so strongly marked as in the Great Andaman, and who are something between the two, though more of the Éremtága. The tribe on the North Sentinel Island, who are obviously an offshoot of the Öngés, and resemble them in every way. The Járawa tribe on Rutland Island, who are Éremtága; and

The Járawa tribe in the interior of the South Andaman, who are also Éremtága.

In former times individual friendships have been known between members of the Áka-Béa-da tribe, and the Járawas in the interior of the South Andaman; and one, Áka-Béa, named Méba Mót, used so late as 1860, to spend days in the Járawa camps. The conflicts with both Áka-Béa-da and convicts since the opening of the Penal Settlement of Port Blair in 1858, has made this tribe hopelessly hostile and timid.

At the present time the Andamanese race, with the exception of the Öngé group of tribes, which is comparatively untouched, are rapidly becoming extinct, and having this in view I have for some time been engaged in making a record of them, principally by photography, my guide being "Notes and Queries on Anthropology," to the whole of the questions in which I hope in time to give answers. These photographs, accompanied by explanatory letterpress, are in platinotype; and, bound in albums of twenty-five pages each, are deposited in the British Museum as completed.

A series of measurements of one hundred males, and one hundred females of the Great Andaman groups of tribes, with statistics regarding their health and general physical characteristics, has also been completed, and from these we find the following:—

The average height of an adult male Andamanese is 1 m., 487; his average weight is 95 lbs., 10 oz.; his average temperature is 99·1°, in an atmosphere of 83° (this is taken for five minutes under the tongue); his average number of pulse beats in a minute is 82; his average number of respirations in a

minute is 19; his breathing is 68 per cent. abdominal, and 32 per cent. upper abdominal.

The average height of an adult female Andamanese is 1 m. 372; 1 m. 372; her average weight is 87 lbs.; her average temperature is 99.4°, in an average atmosphere of 82.5°; her average number of pulse beats in a minute is 91; her average number of respirations in a minute is 16; her breathing is 66 per cent. abdominal, 26 per cent. upper abdominal, 4 per cent. lower costal, and 4 per cent. upper costal.

The Traveller's Anthropometer, kindly presented by Sir Wollaston Franks for the purpose, has been used in taking the measurements.

All the observations for weight, pulse beats, temperature, and respirations, were taken three hours after a full meal, when the subject was, and had been for some time at rest in the shade.

A specially corrected chronograph has been used for taking the number of pulse beats and respirations, which were always counted for a whole minute.

The temperature has been taken by a clinical thermometer, corrected at Kew, and kept for five minutes under the tongue of the subject.

Many of the observations for temperature have been checked by other observations at different times, and on different days, taken with four other thermometers.

In the physiological work I have been assisted throughout by Surgeon-Captain W. Molesworth, M.B., I.M.S.

The question of the bodily temperature of the Andamanese has been carefully investigated. It will be seen that, though very near that of the Aryan family, it has a slight tendency to rise above the normal of that family, and it is uncertain what is the cause for this higher reading. Apparently there is no marked fever or other disease present, as there are absolutely no signs or symptoms of an abnormal condition, nor do the Andamanese themselves recognise any difference in this respect. As their food is largely carbonaceous their diet may be the cause, or possibly from always living in a malarious country there may be a slight masked fever extending over some weeks in duration, to which the Andamanese are so accustomed that they fail to notice it. There is no doubt that they very frequently suffer, for two or three days at a time, from a degree or two of masked fever, which appears to have so little influence on their actions and general appearance that they state they are perfectly well when their temperature is over 100°. In the majority of

days in the year they are slightly feverish, as street boys in England have a slight running cold, and this feverishness appears to be the result of chills. There is no splenic disease.

They dislike and fear cold very much, and do not bear it well sensitively, but physically, on the few occasions when they have been taken to Calcutta in, for them, very cold weather (thermometer 54° in the daytime), they have borne the cold very well, have not been inconvenienced by it, and have not only not suffered, but have rather improved in health.

They bear the heat of the sun well, but complain sometimes, get bad headaches, sun fever, &c. They go stark naked and with no covering on their heads at midday, on sea or land, in the hottest weather, not however from choice during the middle of the day, as they do not court exposure unnecessarily. Sometimes they hold a leaf umbrella over their heads, if out in a canoe in a very hot sun. The fact of their knowing that they had to undergo this exposure would, however, not deter them from any journey, &c., while the fear of a similar exposure to cold would certainly deter them.

They do not bear thirst at all well, and hunger almost equally badly. They are accustomed to gratify both the moment they feel the sensation, and not being used to privations cannot endure them.

They, for similar reasons, cannot ordinarily stand more than twenty-four hours without sleep, though they have been known on the occasions of big dances to go for four days and nights without sleep, becoming much exhausted afterwards.

They have a tendency to prognathism, which, however, is only strongly marked in a few instances, and very many cases of absolute orthognathism are met with.

Allowing for the acuteness gained by practice and necessity, their sight does not appear to be superior to that of an ordinary European, who, if he passed through the same training would see as well as they do. I have heard astonishment expressed at the way in which they will accurately name another Andamanese who may be at a considerable distance, but it should be remembered that they distinguish by gait, &c., as we do; and moreover, they know whom they expect to see in that particular place and are therefore on the look-out. I have seen them, when not thus prepared, make many mistakes, while an European standing by them gave the accurate names of the persons seen.

They are gentle and pleasant to each other, but having no legal or other restraint on their passions, are easily roused to anger, and shoot and kill. They are certainly cruel, but in

treachery, cruelty, and general untrustworthiness would compare favourably with many of the natives of India. One often hears the English schoolboy described as a savage, and after sixteen years' experience of the Andamanese, I find that in many ways they closely resemble the average lower class English country schoolboy. Their conduct towards strangers has not been worse than might have been expected, considering what they have suffered at the hands of strangers, and I have little doubt that many of the cruelties attributed to the Andamanese in former times should have been credited to the Malay pirates who haunted these islands for the purposes of general piracy on the trade of the Bay of Bengal, the Andamans from their position and excellent harbours forming a good central rendezvous; and to kidnap the Andamanese and sell them as slaves to the Rajah of Queda, who forwarded them as tribute to the Court of Siam, where they were much valued. It was to the interest of the Malays, in order to keep others away from the Andamans, to give the aborigines as bad a repute as possible.

With the male Andamanese sexual desire generally commences at about eighteen years of age, and as their love for sport is greater than their passions, these are not gratified to any great extent till after marriage, which rarely takes place before a man is about twenty-six. Probably for this reason the men keep a boyish appearance until they are about thirty, and age very little till after forty.

Their intelligence, and their tractability and usefulness becomes less (as regards subjects foreign to their original savage life only), after they pass forty years of age, and they then become more savage and quarrelsome in disposition.

From twenty-four to thirty-eight the men scarcely alter in appearance, though their figures, the sheen of their skin, and the delicacy of their features is best seen at the former age, for as they grow older the skin becomes coarse, and the figure "wall-sided," the eyes too, which are very clear in youth, become dulled in after life. The teeth also become worn and discoloured with age, though little caries is seen.

The intelligence of the women, though not equal to that of the men, is very fair. The old women amongst the Andamanese are often very capable, and are much respected. They do not become peevish and querulous in old age, but retain the bright merry nature of their youth.

The average number of children borne by one mother is three, but instances of seven and even eight are known. Only one case of twins has been heard of, and both children died shortly after birth. So far as can be ascertained, when once a woman has a miscarriage, she has no children afterwards.

The duration of life of the Andamanese is about sixty years, and cases of people attaining to about sixty-five are known. The women seem to live to a greater age than the men.

I have often been asked to give detailed reasons for the cause of the rapid extermination of the Andamanese. Briefly these appear to me to be as follows :—

1st. The epidemic of measles in 1877, which, with its sequelæ, must have killed at least 25 per cent. of the whole race.

2nd. The syphilis which was introduced in the early days of the settlement by the convicts and the Naval Brigade, but the ravages of which were not noticed until about 1874, when the disease had a firm hold on the race and the children were becoming affected. Besides direct deaths from this disease, the constitutions of those who recovered were so weakened that they easily succumbed to other ailments which they would ordinarily have resisted, and of course the children are rickety and generally delicate.

3rd. The clearing of the settlement of Port Blair.

This being the rendezvous of all the savages, where they receive their presents, and where the tribes meet and have great feasts and dances, nearly all the people come there at one time or another.

Now the Ēremtāga throughout the whole year, and the Āryāuto in bad weather, live in a dense forest where wind cannot penetrate. When in Port Blair, they are exposed to the inclement weather in the clearings, are often washed and therefore deprived of the little protection which turtle oil and mud gives them, and engage in dances during which, while dripping with perspiration they rush out into the cold wind and drink copiously of water. What wonder that fever and pneumonia supervene, and even if death is not the immediate result, a weakened system liable to collapse at the next attack is assured.

It is impossible to control the habits of the adult Andamanese to any great extent, and therefore to meet the occasion as far as possible, I have established at my own house a home for children. All those from about seven years of age (up to which time they do best in their jungle homes with their parents) are brought into me, carefully looked after and well fed, the weakly ones nursed on iron, wine, and cod liver oil, and prevented from excesses of any kind, besides being gradually inured to the climate, and exposure in the clearings. The result has been that a body of youths, about eighty in number, are now with me, who compare very favourably with any of the people in the

islands. These are encouraged, when old enough, to marry and settle down with me, but care is taken, by giving frequent leave for weeks together in the jungle with the other aborigines, that they should retain all their savage accomplishments and ways, and they are not allowed to mix with the natives of India. The pseudo-savage who has adopted the vices of the races with whom he has come in contact, without being intellectually capable of assimilating their virtues, is a more contemptible being than the original savage, and my wish is to keep the Andamanese as healthy savages only.

In answer to a possible question on the subject I would state that after a prolonged trial it has been found that the Andamanese are not capable of understanding Christianity or any such abstract matter; and, as from their excellent customs, and absolute ignorance of much wickedness, they may be considered to be morally superior to most Christianised races of their intellectual calibre, they are best left as they are.

In conclusion I would add that I have been directed by Major Temple, the Chief Commissioner of the Andamans, to write a book on "Our Relations with the Andamanese," the first part to contain all that is known regarding the relations of outsiders with this people, prior to the founding of the present Penal Settlement at Port Blair, and our own relations with them since then; and the second part to be an answer in full to all the questions in "Notes and Queries on Anthropology."

It appears the more necessary to do this, as, in spite of the existence of Mr. Man's excellent work on the South Andaman group of tribes, almost all the writers about the Andamanese at the present time persist in quoting from the incorrect information supplied by casual visitors to these islands, who, generalising from a few hours' observation of the savages, often under the difficulties of active hostility, as well as the general drawback of complete ignorance of the language, have for many years misled the world regarding the Andamanese.

ROCK-CUT SEPULCHRAL CHAMBERS *in* MALABAR.

By F. FAWCETT.

[WITH PLATE XXVIII.]

UNDERGROUND tombs made by people in Malabar, long ago, have been described as early as 1822 by Mr. Babington.

In August last there were discovered, quite by accident, in the outskirts of Calicut, the chief town of the province, two

rock-cut sepulchral chambers which I will attempt to describe, as in form and design they are not identical with any of the illustrations in the manual of the Malabar District by Mr. Logan.

Houses in Malabar are built commonly of blocks of laterite,¹ shaped like large bricks. The process of quarrying consists in cutting the laterite while its consistency is—as it always is a few feet below the surface—something like rather hard cheese.

While amenable to sharp tools the blocks are cut and shaped as if they were wood, and left on the surface to harden. In the course of a few years they can be used for building. When exposed on the surface for ten years or so they become hard enough to resist the action of water, and bridges may be built of them.

The sepulchral chambers I speak of were discovered while quarrying this laterite. A cavity was cut into; the workmen explored it, and, tapping the walls, found there was another cavity beyond, so they cut into it also. This event occurred just before my arrival in Calicut, and the local head-man of the parish (the Malabar Amsham) had already removed the contents of the chambers and sent them to the nearest magistrate. These comprise three vessels of pottery, wheel-made, and moderately hard, and four iron implements which appear to be agricultural rather than warlike. One a curved knife, or chopper, is like a modern tool.

There was not, the workmen told me, any communication or passage between the chambers. The highest point of the cavity (I measured the outer one: the inner chamber is just about the same) is 78 inches below the ground surface. The length from A to B (see Plate XXVIII) is $92\frac{1}{2}$ inches, and the breadth from C to D, $73\frac{1}{2}$ inches; H is a flat platform with well squared edges, 12 inches high, and 60 inches long from E to F, and 32 inches wide from C to K. The opening, or mouth, of each was at first made large enough to admit the man who did the excavation and for placing therein the urns, &c., and it was afterwards reduced to the dimensions given in the sketch by placing pieces of laterite vertically; and outside, again, was placed a rough slab of granite. (It may not be granite; but it looks like it.) This prevented the cavity becoming filled up by infiltration.

The site is within an enclosure—a sort of garden, such as surrounds every house in Malabar. There was no circle of stones or anything to indicate the existence of the subterranean chambers: indeed, the land had just been ploughed. It was not,

¹ "An altered, or ferruginously infiltrated condition of weathered or decomposed gneiss."—Geological Report.

unfortunately, possible to dig in order to ascertain to what extent the laterite had been cut into, downwards, for the purpose of excavating the chambers, or whether there were other chambers in the vicinity. The cavity had been filled up with a mixture of sand, as was discovered by removing the little granite door at the mouth of one of the chambers.

Whether the urns and tools had been placed on the platforms I could not ascertain: a definite answer could not be reached.

SOUTH INDIAN STONE CIRCLES. By F. FAWCETT.

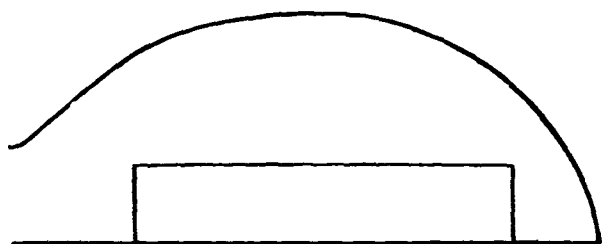
THE commonest kind in South India, always in hard rocky places, and generally where it is hilly, are circles of rough stones, a couple of feet above ground, and from 30 to 50 or 60 feet in diameter. They have a gap or opening to the east, the stone that should be in the opening in order to complete the circle being placed inside the others, or sometimes outside the circle—sometimes both inside and outside. All those I have opened appear to have been sepulchral, though in some were only found pieces of broken pottery. In one place I opened three or four such burying places. The best find was in one in which the (central) sepulchral chamber was 7 feet deep, and about 4 feet by 3 feet. The sides of this chamber had been built of small stones, and it had been filled in with soft blackish earth, evidently carried from a distance, for there was none in the neighbourhood. There were broken fragments of bones, pieces of pottery, an iron arrow head and two other small iron tools or weapons.

They were very much worn and corroded, except the arrow head, and could have been easily broken.

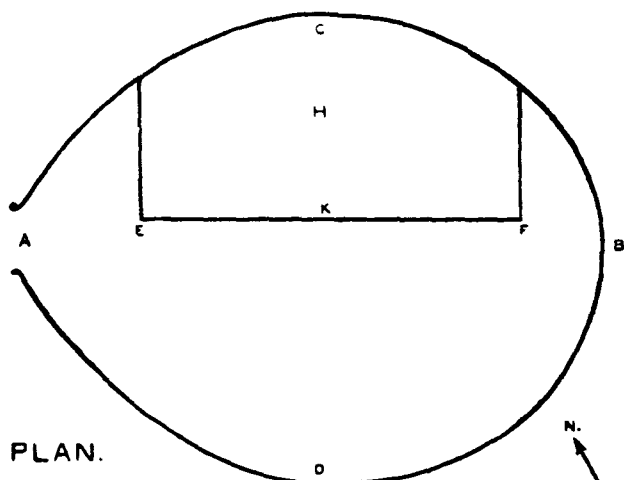
In another burying place close by, which *looked* much more ancient, and was formed of different stones, the chamber was composed of slabs of stones obtainable from a distance of not less than nine miles from the spot. It was oblong. The top slab had been broken, and several pots inside had been broken to pieces. There were small fragments of bones; and a small stone which appeared to have been shaped, and which *might* have been an arrow head. It seemed to have been worn on the surface and edges, perhaps through decomposition. The earth inside the chamber was very soft and fine, while that outside was *very* hard and stony: it had been brought from some distance, evidently. I never found another with a chamber below ground as this one—it was about a foot and a half below the surface—but I have seen several tombs of simply a stone slab chamber.

above ground; deep in the ground, and a foot or so above. In the middle of these were bones. I may say I saw these above-ground rectangular tombs in the jungle on the banks of the River Kistna, where it is supposed the Koh-i-Noor diamond was found, and where there are signs of ancient workings for diamonds. In another place—not very far from the site of the first two described—I opened some tombs on and round about a low rocky hill. The hill was almost solid rock; and as the stone workers had been digging into it for stones for building, I was able to see exactly how the tombs were shaped and how their contents were placed. The rock is easily broken into slabs, squares, and triangular pieces. The black earth over the pottery was *very* hard, as if superimposed pressure was great. In one or two tombs beautifully sectioned before me, I saw skulls and bones and pottery. The skulls and bones could not be removed; they were as if absorbed by the earth. There were numbers of small vessels of pottery—all broken. In many of these burying places one finds but a few broken pieces of pottery. In one I found a couple of handfuls of white chalky stuff.

There are many different kinds of tombs in South India, those of Malabar being specially curious. In Tinnevely (extreme south) skeletons have been found in huge earthen vessels found inside a stone circle. A friend of mine got a beautiful necklace of small elephants or such like animals, but whether in stone or metal I forget, for I did not see it—metal I am almost sure. In some places the pressure has not been so great, and very well-shaped earthen vessels have been found. My friend Mr. Sewell, in Bellary, has some very good ones, with round or pointed bottoms—a favourite shape in old times in India apparently—resting on a ring to stand upright. But all those opened by me seem to have been subjected to great pressure, the earth at the bottom being sometimes *very* hard indeed, and the pottery and bones much broken.

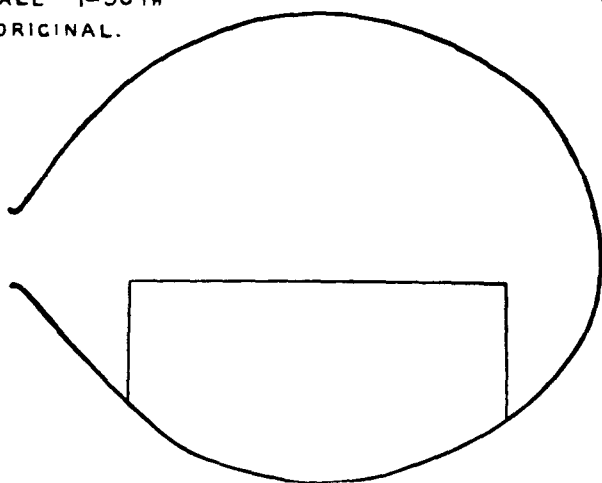


SECTION.



PLAN.

SCALE 1-30TH
ORIGINAL.



ANNUAL GENERAL MEETING.

JANUARY 21ST, 1896.

E. W. BRABROOK, Esq., F.S.A., *President, in the Chair.*

The Minutes of the last Meeting were read and signed.

The CHAIRMAN declared the ballot open, and appointed Colonel C. K. BUSHE and the Hon. JOHN ABERCROMBY Scrutineers.

The Treasurer, Mr. A. L. LEWIS, read the following Report:—

TREASURER'S REPORT FOR 1895.

The income of the Institute for the year 1895 from subscriptions, publications, and interest, was £514 2s. 8d., being £113 16s. 3d. less than was received from the same sources in 1894. Of this diminution nearly £75 occurs in the subscriptions, and £38 odd in the publications. The decrease in the return from publications is largely due to the fact that last year's account included several copies of the Index, which caused it to exceed the average amount received; the amount received in 1895, is in fact in excess of that received in 1893. The decrease in subscriptions is also more apparent than real; we have received only two life compositions in 1895, as against three in 1894, and, whereas in 1894 we received £16 16s. in advance for 1895, in 1895 we received only £2 2s. in advance for 1896; a smaller sum was received also for subscriptions in arrear, because the arrears had already been pretty thoroughly dealt with. The annual subscriptions for the year 1895 were therefore substantially the same as those for the year 1894.

The expenditure for the year under ordinary heads was £554 5s. 3d., but, as we have paid for five *Journals* instead of four during the year, it must, for purposes of comparison, be taken as £511 15s. 3d., being £59 5s. 6d. less than in 1894, and £2 7s. 5d. less than the income for 1895. Of the decrease £34 occurred in connection with the *Journal*, £12 in salaries and commissions, £6 in stamps and parcels, and £6 in printing and stationery.

Out of the amount received last year £20 17s. 4d. have been spent in binding, and £4 in the purchase of a lantern, which is

expected soon to pay for itself by saving the amounts formerly paid for hire.

The liabilities at the end of 1895 (other than our moral liability to life members) were :—

	£	s.	d.
Rent for one quarter	33	15	0
<i>Journal</i> (one number).. .. .	53	7	0
"Anthropological Notes and Queries"	27	10	4
Sundries, say	15	7	8
Total	<u>£130</u>	<u>0</u>	<u>0</u>

The assets at the same date were £600 Metropolitan Board of Works Stock (worth about £720), cash in hand and at the Bankers £144 3s. 7d., some unpaid subscriptions, and the library, furniture, and stock of publications.

A. L. LEWIS,
Treasurer.

ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Receipts and Payments for the Year 1895.

RECEIPTS.

BALANCES, 1st January, 1895:	
Cash at Bank	192 10 2
" in hand	7 0
" " Petty	4 6 10
	<hr/>
197 4 0	
25 10 10	
	<hr/>
Less "Notes and Queries" account	171 13 2
	<hr/>
SUBSCRIPTIONS:	
For the year 1895	350 14 0
Two Life Compositions	42 0 0
Arrears	21 0 0
In advance	2 2 0
	<hr/>
415 16 0	
	<hr/>
SALE OF PUBLICATIONS:	
Messrs. Kegan Paul & Co. (July, 1894, to June, 1895)	71 5 6
Office Sales	6 15 2
	<hr/>
78 0 8	
	<hr/>
DIVIDENDS for one year on Metropolitan Board of Works 3½ per cent. Stock (less Income Tax)	20 6 0
SKULLS (sold in 1894)	10 0 0
"ANTHROPOLOGICAL NOTES AND QUERIES":	
Balance as per last account	25 10 10
Sales during 1895	1 19 6
	<hr/>
27 10 4	
	<hr/>
£723 6 2	

PAYMENTS.

RENT (including coal and gas), for one year to Michaelmas, 1895	185 0 0
PRINTING JOURNAL, Nos. 88, 89, 90, 91 and 92, including illustrations and Authors' copies	257 2 2
SALARIES AND COLLECTOR'S COMMISSION	75 9 5
STAMPS AND PARCELS	29 18 0
ADVERTISING	1 14 0
HOUSE EXPENSES:	
Cleaning rooms, &c.	16 11 3
Attendance and Refreshments at Meetings ...	17 10 0
	<hr/>
PRINTING AND STATIONERY	34 1 3
BINDING	16 14 0
LANTERN BOUGHT	20 17 4
INSURANCE AND SUNDRIES	4 0 0
BALANCES, 31st December, 1895:	
Cash at Bank	141 11 11
Petty Cash	2 11 8
	<hr/>
144 3 7	

£723 6 2

Examined and found correct,

(Signed) ROBT. B. HOLT, } Auditors.
O. M. DALTON, }

January 14th, 1896.

The Secretary, Mr. CUTHBERT E. PEEK, read the following Report:—

REPORT OF THE COUNCIL OF THE ANTHROPOLOGICAL INSTITUTE
OF GREAT BRITAIN AND IRELAND FOR THE YEAR 1895.

During the past year ten Ordinary Meetings have been held in addition to the Annual Meeting.

In the course of the year the following numbers of the *Journal* have been issued: Nos. 90, 91, 92, and 93. These contain 449 pages of letterpress, and are illustrated by 23 plates.

The library is in full working order, and many important additions have been made to it in the course of the year. The catalogue has also been completed to the present time. Twenty-one new Fellows have been elected during the year, viz., three honorary, and eighteen ordinary Fellows; twenty-six have retired, been struck off by the Council, or died. The number of Corresponding Fellows is the same as on the last anniversary, viz., twenty-five.

In the following table the present state of the Institute, with respect to the number of Fellows, is compared with its condition at the corresponding period of last year:—

	Honorary.	Corresponding.	Compounders.	Ordinary.	Total.
January 1st, 1895	43	25	88	206	362
Since elected ..	3	..	2	16	21
Deceased, retired, or struck off ..	2	..	4	20	26
January 1st, 1896	44	25	86	202	357

The following are the names of the Fellows whose deaths have been reported during the year:—

Sir Henry C. Rawlinson, Bt., G.C.B.	} Honorary Fellows.
Professor Carl Vogt	
and, C. C. Babington.	
C. H. E. Carmichael.	
Hyde Clarke.	
T. H. Huxley.	
The Sultan of Johore.	
H. Seebohm.	
H. Norsworthy.	

Mr. PEEK having expressed a desire to retire from the Secretaryship, the Council has nominated Mr. O. M. DALTON as his successor.

The Reports were adopted on the motion of the CHAIRMAN, seconded by Dr. GARSON.

ANNIVERSARY ADDRESS.

By E. W. BRABROOK, *President*.

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I.

1. *Work of the Institute.*

It has been my good fortune to be so closely associated with all that has been going on in this Institute since 1867, when I was first elected on the Council of the Anthropological Society, and 1868 when I was appointed Director, that I frankly acknowledge the gratification I feel in rising from the chair to deliver a Presidential Address. I return the Fellows of the Institute my sincere thanks for the honour they have done me by placing me in a position that had previously been occupied

only by men of world-wide renown. My one qualification for it is my deep and abiding attachment to the Institute and concern for its welfare. As I look back upon these eight and twenty years I rejoice to be able to claim for it that it has been eminently successful in the great object defined in its Memorandum of Association, the promotion of the Study of the Science of Man. The steady work to which the Fellows of this Institute have devoted themselves, and the valuable papers which have made our Journal a storehouse of anthropological facts, have contributed largely to obtain for the Science of Anthropology the public estimation it now enjoys. We have had our times and seasons of discouragement; we have never been a numerous body, never half so numerous as we ought to be, but we have held firmly to the object and purpose we proposed to ourselves, and we may confidently rely upon the judgment which the scientific world has formed of our work.

2. *Papers on Physical Anthropology.*

In reminding you of what that work has been during the past year, there are more reasons than one why I should begin with the paper read before us by Dr. Eugène Dubois of the Hague (whom we have since elected an Honorary Fellow of the Institute), on the fossil remains discovered by him in the island of Java, to which he gave in the exercise of his right as discoverer the name "*Pithecanthropus erectus*." Whatever may be the final agreement arrived at as to the question of nomenclature, this discovery seems to bring us nearer to the beginning of the appearance of man upon the earth than any previous one. Whether, as he humorously put it, we English are right in claiming the remains as those of homo, or the Germans in declaring them to be simian, or whether he standing between the two countries is right as a Dutchman, in assigning them to a mixture of both, the skull from Java appears to stand as definitely behind that from Neanderthal as the latter does behind a typical human skull of the present day. The paper was especially important in the geological evidence it furnished

of the antiquity of the remains. I am permitted to adorn and enliven this Address with some lines with which my learned friend, Sir Courtenay Ilbert, was inspired on the occasion :—

“ Simian skull and human thigh,
Why as neighbours are ye found
Deep beneath the Javan ground ?
Grisly comrades, tell me why !
“ Were ye one or were ye twain ?
Didst thou, monkey, walk upright ?
Wast thou, bowless, in the fight,
By thy straight-thighed cousin slain ?
“ What strange antics wast thou at,
Ancestor of unknown shape,
Ape-like man or human ape ?
Pithec—anthrop—hylobat !”

The answer to these questions I must leave to the ingenious pencil of Mr. E. T. Reed.

Dr. Winfield Hall reported to us the careful and extended observations he had made upon 2,000 school boys and students of Philadelphia, and the study of the changes in the proportions of the human body during the period of growth which he had pursued at Leipsic in 1894 on the material thus collected. This material was, for reasons which he explained to us, exceptionally homogeneous, unusually comprehensive and thorough, and subjected both graphically and in a tabular form to very careful and complete analysis. He submitted that it established three canons of proportion of the human body during the period of growth :—The first, that when the vertical dimensions are undergoing an acceleration of the rate of growth, the horizontal dimensions undergo a retardation of the rate of growth, and the converse ; the second, that the weight at different ages varies either as the product of the height by the depth of chest squared, or as the product of the height by the breadth between the shoulder-blades and the depth of the abdomen ; and the third, that the capacity of the lungs at different ages varies as the total muscular strength. Dr. Hall may thus be congratulated on having distinctly contributed to our knowledge.

of the laws of growth. The neatness and convenience of the mathematical formulæ employed will also make his paper a valuable one for reference by any who may be engaged in similar investigations among other communities or in different parts of the world.

A paper was read by Mr. Duckworth, of Jesus College, on the skeleton and six skulls of Esquimaux from Labrador recently presented by Dr. Curwen to the Cambridge Museum under the care of my predecessor, Professor Macalister. The measurements and indices of these skulls, compared with those of others existing in the same collection, agree in the main with those recorded from other collections, and may be taken as establishing the special characteristics of the Esquimaux type.

The communication which Dr. Kollmann of Basle was so good as to make to us on the question of Pygmies in Europe was a brief abstract of the larger treatise on the same subject which he had published abroad ; and its special value to us was in drawing attention to the conclusions there enumerated at greater length. The subject of the existence and history of pygmy races is one which, as our Journals show, has been dealt with by our colleague Sir William Flower.

3. Papers on Prehistoric Archaeology.

We owe to our valued Treasurer, Mr. Lewis, a paper on the Prehistoric Remains of Cornwall, which corrected some errors of former observers, and introduced to our knowledge some remarkable monuments which had most unaccountably been omitted from the catalogue of Lukis and Borlase. Illustrations of these are given by Mr. Lewis's accurate and skilful pencil, and the situation of some of them with regard to existing skymarks has confirmed Mr. Lewis in the view that they were placed where they are with regard to the observation of certain of the heavenly bodies at particular seasons of the year. If this view be accepted, the builders of these ancient structures had ideas in common with those which have been traced in the civilisation of Ancient Egypt and through it of

early Greece, and those of Mesopotamia and of China. Mr. Lewis's papers related to East Cornwall only, and will, I hope, be followed by others in which the prehistoric remains of other parts of that most interesting county will be equally thoroughly dealt with.

Mr. Abbott gave us excellent descriptions in three papers of the barrow at Sevenoaks, the kitchen midden at Hastings, and the specialised and in some cases exceedingly beautifully formed diminutive flint implements which he found in those places.

4. *Paper on Sociology.*

Coming down to a later stage of civilisation, we had a valuable paper from Professor Maxime Kovalevsky, of Moscow, on the *Lex Barbarorum* of the Daghestan. This is a transcript, itself some three centuries old, of the immemorial customs which formed the unwritten law of the people of that part; and it is especially interesting to us, as the foundation of our own law is that customary or Common Law which resides in the breast of the judges, and has never yet been codified or authoritatively reduced to writing. There are few peoples in so low a stage of civilisation that the process of converting custom into law is unknown to them, and every authenticated instance of the kind is very useful as a guide to the ideas of right and wrong that most readily lend themselves to such development. In this case, there are many points in which the customary law has a close analogy with that of our own country in early times, as in respect of the Wehrgeld, the *lex talionis* and other matters.

5. *Papers on Ethnography of Europe.*

We are indebted to Dr. Beddoe for a paper on the Northern Settlements of the West Saxons, in which, by observation of the colour of hair and eyes on the Eastern slope of the Cotswolds, he confirms the impression derived from the study of history, that the Saxon settlements in that direction took place at a later date than that of the Saxon settlement on the upper Thames.

Mr. Myres has supplied us with a curious morality on the subject of the doom of the miser which is at this day performed among the modern Greeks.

6. *Papers on Ethnography of Asia.*

Mr. Bent has delivered a most instructive lecture to us on the peoples of Arabia.

Mr. Kehelpannala, a Singhalese gentleman, has described at first hand the customs observed by the Kandyans of Ceylon in connection with paddy cultivation.

Mr. E. B. Landis has furnished full details of the burial observances of the peoples of Corea, and Mr. Gowland has explained in what respects they differ from those of their co-religionists in China.

7. *Paper on Ethnography of Africa.*

The Rev. Godfrey Dale has contributed to us (through the kind intervention of Mr. C. H. Read) an account of the customs and habits of the natives of the Bondei country in East Africa ; interesting as being an instance of the usefulness of the "Notes and Queries on Anthropology," but especially valuable as a record of the researches of a keen and well-equipped observer, who had acquired a remarkable mastery of the language of the natives, and had so secured their confidence as to be able to obtain full details of their practices in regard to male and female initiations, witchcraft, and the like, showing striking resemblances and at the same time marked divergences when compared with similar customs recorded as prevailing in Australia and elsewhere.

8. *Paper on Ethnography of America.*

Miss Buckland has contributed a suggestive paper on four as a sacred number, founded upon analogies between its use among the Mexicans and American Indians and in the old world.

9. *Papers on Ethnography of Australasia.*

Mr. Etheridge has communicated to us two papers respectively on the game of tee-to-tum in Queensland, and on Australian shields.

Mr. Mathews, an exceptionally qualified observer and excellent draughtsman, has favoured us with four papers as follows:—

1. On the Rock Paintings and Carvings of the Australian aborigines.
 2. Stone cooking holes and grooves for Stone-grinding used by the Australian aborigines.
 3. The Būrbūng of the Wiradthuri tribes.
 4. The Bora, or Initiation Ceremonies of the Kamilaroi.
- Part II.

Professor Haddon has exceedingly well illustrated the races of British New Guinea, and adduced evidence that it is inhabited by three different peoples,—the true dark Papuans, and two distinct Melanesian peoples of lighter complexion, having affinities respectively with those of the New Hebrides and Solomon Islands.

Mr. Edge-Partington has exhibited to us some objects of unusual type from Matty Island, a small and hitherto unknown island on the north coast of New Guinea.

10. *Papers on Linguistics.*

Mr. J. T. Last has given us information as to the languages spoken in Madagascar, well worthy to be recorded in the present circumstances of that island.

Latest, but certainly not least in scientific importance, Mr. Basil Hall Chamberlain has contributed an account of his acquisition of the Loochoo language, and his determination of its grammatical principles.

II.

11. *Losses by Death.*

Our Institute has reached a stage in its history corresponding with the close of a generation of workers—a stage that tests the stability of any association. We now see falling away from us one by one those colleagues who have been in the front rank all through our work. It has been said that—

“No conquest ever yet begun
And by one mighty hero carried to its height
E'er flourished under a successor or a son;”

and so it has often proved with associations. As the generation passes away which supplied the motive force for their foundation, other interests assert themselves, and the whole spirit of the work, if not the work itself, expires. It has been shrewdly observed, moreover, that when a great man dies, it nearly always happens that his arc of usefulness is complete. To some of the great men whom we have recently lost, we shall not be very willing to apply this generalization. Their services to science have been so important that we cannot but repine at those laws of nature which have left them, as it may seem to us, unfinished and incomplete. The truth still remains that we are to look not to the passing but to the coming generation for the work that is to be done; and when I glance at my colleagues at the Council table I am glad to think we shall not look in vain. Among the younger anthropologists who are heart and soul with us, there are men who, I am convinced, are destined to achieve discoveries which will lay our science on a firmer and wider basis than ever, till the time shall come when the Anthropological Institute of the future may say—

“At genus immortale manet, multosque per annos
Stat fortuna domûs, et avi numerantur avorum.”

12. *T. H. Huxley.*

The greatest of our losses by death during the year is that of the Right Hon. Thomas Henry Huxley, better known to us

as Professor Huxley. The earliest contribution from him to our Proceedings that can be traced is on June 23, 1862, when he wrote a letter on certain human remains which had been submitted to him by the Council of the Ethnological Society as found in shell mounds, apparently in Province Wellesley, in the Malay Peninsula, and, strangely enough, it is printed as signed "F. W. Huxley." He did not, however, join the Society till 1863, in which year he was elected on the Council. On November 20, 1866, he read an account and gave an explanation of a Patagonian skull. He was elected President of the Ethnological Society in 1868, in succession to Mr. John Crawford. During that year of office he arranged for the Society the map of the world, showing the distribution of primeval races, which long occupied a post of honour at our meetings, and used constantly to be referred to in illustration of the papers read. He also opened the proceedings by an address at each of a series of special meetings devoted to the natives of India, the aborigines of North America, and other popular subjects. He was at the same time President of the Geological Society and was President of the British Association in 1870, having been President of Section D (Biology) in 1866, when an Anthropological Department of that Section was first constituted. He was President of that Department in 1871. On May 10, 1870, he delivered to the Ethnological Society an address on the Ethnology of Britain, of which an abstract only appears in the Journal, and on June 7 he communicated to the same Society a paper on the Geographical Distribution of the Chief Modifications of Mankind, in explanation of the standard map to which I have already referred.

In 1863, Professor Huxley published his work entitled "Evidence as to Man's Place in Nature." It consists of three short essays, respectively on the natural history of the Anthropomorphic Apes; the anatomical relations between man and inferior animals; and certain fossil human remains: but, having regard to the state of scientific opinion at the time it was written, it was of vastly greater importance than its bulk, and

it marked a step in advance that has never yet had to be retraced. As Darwin says, Huxley has conclusively shown that in every visible character man differs less from the higher apes than these do from the lower members of the same order of Primates.

It is to Professor Huxley that we owe the completion of the long delayed amalgamation of the Ethnological and Anthropological Societies into this Anthropological Institute. I am myself the last remaining among us of the four delegates who were authorised by the Anthropological Society to meet Professor Huxley as the plenipotentiary of the Ethnological Society; and I am therefore in a position to give personal testimony to the fact that to Huxley's candour, courtesy, and tact, more than to any other cause, were due the successful carrying out of that arrangement and the termination of a condition of things that had been prejudicial to the interests of science. I may therefore assert that he was the real founder of this Institute.

Since then, the occasions have not been frequent in which we have had the good fortune to see him at our meetings; but his pen has been active in the cause of Anthropology. The collected edition of his works that has recently been published with his final corrections gives ample evidence of this. The volume of *Darwiniana* and that of Anthropological essays contain writings that have largely contributed to the popularisation and progress of our science. The Royal Society, of which he was for so many years an ornament, and in which he served the offices of Secretary and President, has originated a movement for a memorial to him. If each person who owes to Huxley new light on the problems of science and of life will but contribute in proportion to the benefit he has derived, the fund will be rich and ample: and I cannot but hope that, after the personal memorial of a statue in the Natural History Museum has been provided for, there will remain enough to set on foot the systematic teaching of Anthropology in one or more of our great centres of learning, and that Cambridge and London may be enabled to follow the example which has been set them by

Oxford of establishing a Professorship of Anthropology. I cannot imagine a memorial which would be more truly commemorative of the great aims and work of his life, more consonant to his own feelings if he were here to express them, or more useful to mankind, than the establishment of a Huxley Professorship of Anthropology. I believe that it would come to be regarded as the blue ribbon of our science, that the chair would be an object of ambition to our best anthropologists, and that work would proceed from it which would ever keep fresh and green the memory of our departed friend and chief, and lay deeper the foundations and broaden and adorn the superstructure of the Anthropological sciences. My proposal to this effect, supported by the members of our Council, was not so warmly received as I hoped by the provisional committee for the memorial; but, through the advocacy and excellent generalship of Sir Wm. Flower, it was not rejected, and I still cherish the hope that it may take effect.

13. *Hyde Clarke.*

Of Mr. Hyde Clarke our records are much more full. The earliest contribution I can trace of his was written while he was at Smyrna, and communicated to the Ethnological Society on March 7, 1865, "on the inhabitants of Asia Minor previous to the time of the Greeks." By a method which he much favoured, he traced in the place-names Iberian affinities, and deduced an Iberian origin for the peoples of Asia Minor. In 1867, on his return to England, he became a Fellow of the Society, and on April 9 read a paper on the propagation of mining and metallurgy. He was elected on the Council in 1868. On February 25, he read a paper on the Varini of Tacitus, or Warings, and their relations to English Ethnology; on March 10 one on the Ethnological position of the Guanches, as dependent on their philological relations; and on April 7, a short communication on the relations of the languages of the Darjeeling tribes. In 1869 he became Hon. Foreign Secretary,

and contributed a note on the nineteenth century superstition that a lion shilling is lucky, and a paper on the proto-ethnic condition of Asia Minor, in which he pushed still further the question he had raised in 1865. His connection with the Anthropological Society commenced on November 14, 1865. On February 6, 1866, he sent communications to it on the people inhabiting Moravian Wallachia, and on anthropological investigations in Smyrna. On April 30, 1867, he read a paper on the topographical nomenclature of Turkish Asia Minor, and on June 2, 1868, a note on Creolism. To both Societies he rendered great service by joining in the discussions at the meetings, which his wide knowledge and great facility of expression enabled him to do with effect.

Mr. Hyde Clarke's contributions to our Journal since the fusion of the two Societies in the Institute have been so numerous that I shall not attempt to describe them in detail. He was elected a Vice-President continuously for the 11 years from 1877 to 1887, and again for the three years from 1889 to 1891, and was a member of Council from the formation of the Institute to the time of his death. His profession was that of an engineer, but his great natural faculties, aided by the knowledge of men and things gained by long residence abroad, entitled him to speak with authority on many matters of public concern, and he was the founder, and for some time the secretary of the Corporation of Foreign Bondholders, an institution which has done much for the protection of investors who have been minded to trust their savings in the hands of foreign governments. As a man of affairs, his advice to the Council on all matters of business and finance was always sought and found to be valuable. I should like to be permitted to add a word of acknowledgment of his personal courtesy and kindness to myself during the many years we have served on the same Council, inasmuch as we had been ranged on different sides in some of the heated discussions of bygone times. All these were dismissed by him from memory when we came to be colleagues. Besides our own Institute, he was an active member of the

Statistical, Historical, and other Societies, and he was author of many popular and useful works.

14. *C. H. E. Carmichael.*

Mr. Charles H. E. Carmichael, a member of an ancient and distinguished Scottish family, was educated at Trinity College, Oxford, and after taking his degree, became associated for a time with the Manuscripts Department of the British Museum. He was present and took part in the discussion at a meeting of the Anthropological Society on November 19, 1867, but was not elected a Fellow until February 18, 1868. In 1870 he was appointed delegate of the Society to the International Congress of Anthropology and Prehistoric Archaeology to be held at Bologna, and visited Italy, but the disturbed state of the Continent caused the postponement of the Congress. He acted in the same capacity to many other International Congresses, of which his knowledge of foreign languages made him a very welcome and useful member. In 1873 he made contributions to our Journal on the existence of a race of red men in Northern Africa and Southern Europe in prehistoric times and on the Ainos. He served upon the Council of the London Anthropological Society in 1874 and 1875, and read there three papers, but upon the dissolution of that Society, returned to his allegiance to this Institute, and was elected on our Council in 1878, having previously communicated to us on June 26, 1877 (a meeting when we were honoured by the presence of the Emperor of Brazil), a paper on a Benedictine missionary's account of the natives of Australia and Oceania. His only subsequent communication to our Journal has been notes on prehistoric discoveries in Central Russia in 1880, but he filled for many years a useful and valued place on the Council, and his unexpected death from influenza is much regretted by us.

15. *H. Seebohm.*

Mr. Henry Seebohm's only contribution to our Proceedings was the communication of some particulars respecting the native

traces of Arctic Siberia, which he made in 1879, on his return from that country. Then (and I think on other occasions) he exhibited objects from his collection; but I am sorry to find that he did not reduce his observations to writing, and that accordingly a bare record of the fact is to be found in our Journal. He was, however, for some years a member of the Council, and a useful referee on papers and other matters within his special knowledge. As Secretary to the Royal Geographical Society, and in other capacities, he laboured hard for science.

16. *Retirement of Secretary.*

By another event we are reminded of the mutability of human affairs. Our excellent and accomplished Secretary, Mr. Cuthbert Peek, who for the last five years has thrown into the work of this Institute his inspiring energy and rare qualities, has found that the growth of other engagements and the claims of his country home forbid his continuing his valuable services to the Institute in that capacity. I hope that there remain other functions in which he will still be useful to us, and I am sure he will continue, in his less active connection with us, that deep interest in Anthropological work which has made his tenure of the office of Secretary so successful.

III.

17. *Professorship of Anthropology at Oxford.*

I pass on to notice some events outside our own circle which have tended to the progress of Anthropological science. The establishment of a Professorship of Anthropology in the University of Oxford, or rather the conversion of the office of Reader hitherto held by my honoured predecessor, Dr. E. B. Tylor, into a Professorship is an important fact. I regret that the University has not taken the further, almost the consequential, step, of making Anthropology one of the subjects proficiency in which would be a qualification for a degree, but that step will not probably be much longer delayed. It is

something to have the subject adopted as one of those included in the regular curriculum of University teaching by professors, and still more that the one man who by universal consent is marked out as fittest for such a post should be the first Oxford Professor of Anthropology.

18. *Anthropometry at Pentonville.*

Not less noteworthy is the establishment, under the accomplished and able superintendence of my valued colleague, Dr. Garson, of the system of Anthropometric identification as a part of the prison organisation of the country. Dr. Garson has had the important duty confided to him of instructing the officers of police in the manner of making the requisite measurements, and in the course of the fulfilment of that duty he has acquired much valuable information on the curious subject of the personal equation and other matters incidental to the work, which I hope he may some day be able to communicate to us. There is also accumulating an ample collection of observations which cannot fail to be of great service in the study of criminology, as we may gather from the fact that in the year 1893, 35,714 individuals were measured in Paris, of whom 22,530 were recognised as having been measured before, and 512 were detected where the previous measurement had been under another name.

19. *Ethnographic Survey.*

The Ethnographic Survey Committee, on which this Institute has three direct representatives, and is indirectly represented by a majority of the members, who are also Fellows of this Institute, is pursuing its most useful work. The Rev. Walter Gregor has spent some time on behalf of the Committee in collecting physical measurements and folk-lore in portions of Dumfriesshire, and other observers have been at work in other parts of the kingdom. An exceedingly interesting report on the ethnology of Buchan has been printed by the Buchan Field Club. The Committee's instructions to observers have been widely circu-

lated, through the courteous intervention of the Committee of Archæological Societies in union with the Society of Antiquaries.

20. *New Books.*

Our Fellow, Professor Keane, has published an excellent manual of Ethnology, in which he brings down our knowledge on the subject to the latest date, and illustrates it in the easy and forcible style that is peculiarly his own. He suggests several new views of the admitted facts of ethnology, as for instance, in dealing with language as a test of race, where he argues that as speech changes more readily and more rapidly than physical types, it is more easy to conceive all the present linguistic varieties as derived from an original germ of primitive speech than to conceive the like derivation for physical varieties. In regard to another matter, he observes that "speaking generally, like usages may be regarded as the least trustworthy of all evidences of common descent." He furnishes five family trees—one of the *hominidæ* generally, the others of the Ethiopic, Mongol, American and Caucasian divisions of man respectively. The new race discovered by Professor Flinders Petrie he attributes to the Caucasian type. In this latter family tree he finds no room for the Aryans, as he considers that definition to be linguistic and not racial, and that Aryan migrations have not swept away the indigenous tribes, but have formed fresh ethnical groups with them. He places the Aryan cradle land in the steppes of South Russia, bordering between Europe and Asia. This brief statement of a few of the questions which our esteemed colleague discusses in this work sufficiently indicates how thoughtful and suggestive it is.

Two gentlemen who, though not members of our Institute, are zealous workers in its field, Mr. Elworthy and Mr. Hartland, have published works on the Evil Eye and on the story of Perseus respectively. Both travel independently over part of the same ground with equivalent results. Mr. Hartland reviews in a masterly manner the superstitions which affect the rela-

tion between individuals caused by the imparting to another of something physically connected with one. This opens a wide field of investigation. Mr. Elworthy deals with the same group of superstitions in their relation to the supposed malignant influence of the earnest gaze of one person on another. Mr. Hartland finds an explanation for many of the phenomena he has to describe in the blood tie: the belief that a transfer from one to another of the blood, or of any of the products which derive their origin from the blood, establishes a relation of an intimate kind between the two individuals. Upon this principle he accounts for many of the observances of savages and many of the customs which prevail among ourselves, though their origin has long been forgotten. He establishes, incidentally, the community, almost the universality, of ideas based upon this foundation among peoples of all degrees of civilisation, and of all diversities of race. We shall look for his third volume with no little interest. Meanwhile, I may venture to say that his two volumes, and Mr. Frazer's "*Golden Bough*," constitute a more considerable addition to anthropological knowledge than any which have appeared in England since the classical works of Tylor, Lubbock and McLellan.

Our member, Mr. Clodd, the President of the Folk-Lore Society, has added to his previous works on the *Story of Creation*, the *Primer of Evolution*, and the *Childhood of the World*, a valuable little book on the *Story of Primitive Man*, dedicated to my predecessor, Sir John Evans. He justly says that there is no branch of knowledge which has made more rapid advance during the last fifty years than that of the early history of man.

An eminent statesman, Mr. A. J. Balfour, has published a thoughtful work on the "*Foundations of Belief*." So far as his arguments proceed upon philosophical considerations, this is not the place to discuss them. Incidentally to his main object, however, he seeks to approach his subject from an anthropological point of view, and it will, I think, be generally agreed that he has not succeeded in displacing the evidence afforded

by anthropology of the origin and growth of the religious instinct in man.

21. *British Association.*

The meeting of the British Association at Ipswich was the occasion of several discussions of great interest and importance in Section H. The Section had for President Professor Flinders Petrie, whose eloquent address and intervention in the discussions contributed greatly to the success of its meetings. Some of the communications made to the Section may, it is to be hoped, be repeated in London before us. The subject of cannibalism, and the question of the relations of civilised to savage races were among those most keenly discussed. The Committee appointed to investigate the physical characters, languages and industrial and social conditions of the North-Western tribes of the Dominion of Canada, continues its excellent work with the assistance of the Dominion Government, and has presented a tenth report, by Dr. Franz Boas, being his fifth report on the Indians of British Columbia.

22. *The Brassempouy Statuettes.*

The explorations in which our French colleagues have been engaged at Brassempouy have produced results which are worthy of our attention. They have given rise to a polemic on which, as I have no information to rely upon, I shall make no observation; but they have added to our art relics of primitive man some which present the novel feature of being primitive man's representation of himself or rather of primitive woman. Some fragments of what one may call statuettes have been discovered, carved with a rude touch and possibly with some exaggeration, from which our colleague Monsieur Piette has endeavoured to reproduce for us the type of palæolithic woman. I confess that to me the materials seem as yet hardly strong enough to bear his superstructure; and that nothing has as yet occurred which enables us to state with confidence in

what respects the type of primitive man of either sex differs from ourselves.

23. *The Galleyhill Skeleton.*

I may remind you, in this connection, of the discovery of considerable portions of a skeleton in a gravel pit at Galleyhill, near Swanscombe in Kent, associated with palæolithic implements. This discovery, though it took place some years ago, has only recently been made public in a paper contributed by Mr. E. T. Newton, F.R.S., not to our own Institute, but to the Geological Society. I have been fortunate enough recently to find an opportunity of visiting the spot, and conversing with Mr. Heys, the person to whom the skull was shown *in situ* by the workmen, and also of inspecting the marvellously large collection of worked flints from that neighbourhood accumulated by our Fellow, Mr. Stopes.

The shape of the skull itself seems to challenge contradiction of its antiquity, for it presents marked resemblances to those of Spy, Neanderthal, and Naulette, which are the typical representatives of the palæolithic type. The bones, however, are exceedingly soft and fragile, and the skull has become somewhat twisted in drying, so that it is possible some of its features may have been accidentally exaggerated. It is of extreme length. It is certainly unfortunate that so long a time elapsed between the discovery and its publication and description; but the remains were seen at the time by two respectable and well-informed witnesses, who give evidence of their having been found in undisturbed gravel. While, therefore, we may regret that the chain of evidence in favour of the discovery is not so strong as we should wish it to be, we cannot but hold with Mr. Newton and Dr. Garson that it is very strong, and that the balance of probability lies in favour of its authenticity.

The interesting experiment recently made by Mr. Worthington Smith on the fragment of skull discovered by Mr. Prigg at Bury St. Edmunds, as recorded in our Journal for 1884, shows that that also may become a valuable document in the history of mankind.

IV.

24. Previous Presidential Addresses.

Messages have been delivered from this Chair in past years which have marked distinct steps in advance in the study of the science of Man, and in the practical application of methods of working. If I may remind you of a few of them, it was here that George Busk brought his long experience to bear on the best method of measuring the cranial capacity and exhibited and described his ingenious choremometer; here my immediate predecessor, Professor Macalister, in the Address to which we listened just a year ago, showed us how to simplify the process of craniometry by rejecting valueless measurements, and by adopting those measurements which produce the most certain and valuable results; here Mr. Francis Galton, year after year during the term of his presidency, brought new light on the problem of heredity. Here Sir John Evans addressed to us wise words of caution as to the reception of evidence; here Professor Tylor expounded the method of assigning their real value to observation of manners and customs; here Sir John Lubbock showed the true significance of the classification of relationships among savage tribes. The results of direct personal research were presented to us by Dr. Beddoe with regard to the race distinctions shown by actual measurement not only in these islands but in other countries, and by General Pitt Rivers, when he gave an account of his explorations at Cissbury and elsewhere, and also of those on his own estates which have since been so amply recorded and illustrated by him. Here Huxley laid the foundations and Sir William Flower established the superstructure of the accepted distribution of the races of mankind.

25. Unity of the Anthropological Sciences.

I have searched in vain for any message which I could utter comparable to these, each of them delivered by a master in the

branch of anthropological science which he selected for his topic. I am disposed rather to urge as the lesson which I derive from these various teachings that there is an essential unity in the anthropological sciences. In this respect I must separate myself from the doctrine of my valued friend Dr. Topinard. In his ardour to repress a tendency to the discussion under the name of anthropology of a variety of social, moral, and religious topics, he goes so far as to insist that anthropology is a pure and not an applied science, a concrete and not an abstract science ; and that, therefore, psychology and ethnography are not branches of anthropology but separate sciences. In a large encyclopædic sense, he is willing to admit them as branches of a science of man, but for all practical purposes he would restrict general anthropology to the determination of the physical type of man as an animal and of his place in nature, and special anthropology to the determination of the inter-relations of the special physical types which distinguish particular races of men. This restricted definition has, as you will see, never been accepted by us. We have always held, I think rightly, that the study of man includes that of all his faculties and powers, his superstitions and modes of thought, his customs and his industries, the relics of his past history, and the development of his powers of mind and body under all the conditions of his existence. I am glad to find that in this we are supported by our American colleagues, in whose name Dr. Brinton spoke last August in his Presidential Address to the American Association for the Advancement of Science.

In an article in the October number of the "Monist," a quarterly magazine published in Chicago, Dr. Topinard says:—"We should have to show, if we entered on" the examination of the psychological characters of man, that he "has the same functions as animals, slightly modified here and there, the same general needs, the same modes of satisfying them, the same sentiments, desires, impulses and motives. . . . We should have to show the psychical faculties that are brought into play between sensation and action, isolated and rudimentary in this

or that lower or higher animal, less isolated and more marked in others, forming associations in greater or less numbers in one class, and attaining a remarkable degree of development in another, as in the elephant, the dog, and the ape, but arriving at their highest degree of differentiation and complexity in man when the volume of the brain and its convolutions have reached their maximum. We should have to show in these animals the powers of curiosity, attention, observation, reflexion, determination, the sense for cause and effect, memory and incontestably ideas, for which only the formula is lacking. The studies which have been pursued on this subject in England for many years teem with examples." Instancing certain acts of apes, he proceeds, "Is there reason to be astonished if one of these animals, having acquired by dint of hard efforts articulate language which helps him to fix his memories and ideas, and simplifies these operations, and (*or by* in orig.) having become gradually more precise in his acts of reason, more careful in his acts of will, more highly conscious of himself, more inventive in satisfying his daily needs—is it to be wondered at that he should have created for himself new and peculiar needs, even psychical (*physical* in orig.) in character, and that little by little he should have lifted himself up to the level of the æsthetic sense, the spirit of philosophical inquiry and the love of truth?"

This fine passage indicates that the differences between us are not so great as they seemed. That it is right to study man as a whole, function as well as structure, thought as well as action, is the doctrine taught by the Ethnographic survey in which this Institute has taken so much interest. This was laid down as the principle of its procedure by Professor Haddon, when he first suggested it, and is, I think, unquestionably right. I would substitute for Dr. Topinard's proposition that physical anthropology is the whole of anthropology, the converse, though it may seem to be a paradox, that all anthropology is physical anthropology. In this I do not mean to assert any doctrine of mere materialism. Such fruitless debates were long since summed up in the formula, "What is matter? never mind.

What is mind? no matter." I put it to you that the same methods and processes are to be used for one branch of anthropology that are to be used for another; the same evidence avails, the same results are obtained.

26. *Heredity.*

An example of this is afforded by the subject of heredity which has been so fully dealt with by Mr. Francis Galton. To use the apt words of Dr. Sandys, the public orator, in presenting him for the honorary degree of Doctor of Science at Cambridge on May 16 last, "*Hoc autem in loco, eloquentia ejus undecim abhinc annos conscio, instituti anthropologici præsidem non corporis tantum sed etiam mentis humanæ mensorem appellaverim.*" It is not possible to express more neatly or more justly the claim our distinguished colleague has to represent scientific anthropology on both its sides.

The same processes which result in the inheritance of a physical conformation from parent to child result in the like manner in the inheritance of mental or intellectual qualities. Take as an instance of this, the case of a distinguished family, which originated in the last century from a worthy and opulent trader at Charing Cross. He had three sons, one of whom began his career as Senior Wrangler and ended it as Privy Councillor and Baronet, having been for a quarter of a century Lord Chief Baron of the Exchequer; a second became Field Marshal and Grand Cross of the Bath; a third, Sir David, was Chief Justice of Bombay. Since then a third, a fourth, and I believe a fifth generation have continued the renown of the family. Now the Pollocks are marked by a peculiar configuration of the orbit and the face generally which leads you to recognise one of them almost upon sight. They are also marked by a continuance from generation to generation of mathematical, legal and literary ability. It does not seem to me possible to maintain that the causes which produce the one do not produce the other. To limit the study of questions of heredity to physical measurement would be to curtail it of one half of its province.

The real difficulty of the problem is so to deal with manifestations of heredity in mental operations as to bring them to the like tests of measurement with those which are applicable to physical qualities ; a difficulty which Mr. Galton has done much to meet and to overcome. The tendency to return to the average after an exceptional effort which he observed and described to us in statistics of stature is extremely likely to be observable if a similar number of trustworthy statistics of intellectual faculties could be obtained.

27. *Criminology.*

Another example is the subject of Criminology. It is not necessary that we should follow Professor Lombroso in all his views, but it is impossible not to see that there is a close connection between the physical conformation and the *mens rea*. People will say of a passer-by, "That man has the face of a thief," and where the judgment is not warped by prejudice, or hasty and ill-considered, it is probable that it will not be far wrong. A jury trying a prisoner are sworn to give their verdict according to the evidence brought before them, but it will not be possible for them to avoid taking into consideration the appearance and demeanour of the accused. These are the outward and visible signs of an inward tendency to crime.

Professor Lombroso enumerates the characters by which persons of a criminal type can be recognised even from their earliest days. Extraordinary anomalies of the face and of the skull, asymmetry, macrocephaly, exaggeration of the length or breadth, strabismus, ears badly placed or too large, enormous jaws, bad conformation of the teeth, especially of the incisors now too large and again too far apart, nose flat and crooked, hair abundant on the forehead, an exaggerated development of the body (a child of seven having the stature and weight of one of nine), strength precocious, lefthandedness common, and above all, great dulness of the senses ; a dull sense of touch, a slight sensibility to pain, an imperfectly developed sense of odour and colour.

If, indeed, these characteristics are indications that a tendency to moral disorder has been inherited by the child corresponding to his physical degeneration, there would seem to be ample reason for that investigation into the mental and physical condition of children which has been so ably instituted by Dr. Francis Warner, and the statesman may well turn to the anthropologist for information as to the precautionary measures to be taken in the interests of the community for preventing the spread of the moral disease correlated with symptoms of physical disorder. A first step towards the scientific study of the physical characteristics of the criminal in this country has been taken, as has been already said, by the establishment of a system of Bertillonage under the superintendence of Dr. Garson.

28. *Religion.*

I must also claim, as within the province of anthropology, the investigation into the origin and development of the religious faculty in man. I shall say little on this head, partly because this Address is already sufficiently long, partly because the subject is one of great difficulty and delicacy. Mr. Gladstone is reported to have written recently to a correspondent that "religion can do without science." I do not know exactly what he meant; but I am sure that Anthropological science cannot do without religion. Certainly the study of comparative religions will not diminish the reverence of the student for that Great Cause of all which, when it breathed into the Universe the subtle spirit of life with all its promise and potency, included in the gift that wonderful solace under the ills of life which is afforded by the consolations of religion.

With Blessed Sir Thomas More we may ask—an *varium ac multiplicem expetens cultum deus aliud inspiret alii*: "Whether the different forms of religion may not all come from God, Who may inspire men in a different manner, and be pleased with this variety?"

Joseph Butler, bishop of Durham, wrote in 1736 an "Analogy of Religion, Natural and Revealed, to the Constitution and

Course of Nature." Mr. Gladstone has thought it not unfitting to crown the literary labours of his long and noble life by a new edition of this work; but surely we have learned something of the constitution and course of Nature in the 160 years since it was written. In the light of this better knowledge other analogies may have to be deduced.

In the year 1400, Robert Braybrooke, bishop of London, caused the first sentence under the writ *de hereticis comburendis* to be proclaimed at St. Paul's. His successor in office, 500 years later, is content with milder measures. Here at least is some evidence of favourable development, in the course of so short a time as 500 years. May we not hope, as the generations roll on, that this tendency to the amelioration of religious beliefs and practices may increase; and that the anthropologist may help to put religion in its right place as the true light which lighteth every man that cometh into the world?

It was moved by Dr. GARSON, seconded by Mr. F. W. RUDLER, and unanimously resolved:—

"That the thanks of the Meeting be given to the President for his address, and that it be printed in the *Journal* of the Institute."

The SCRUTINEERS gave in their Report, and the following gentlemen were declared to be duly elected to serve as Officers and Council for the year 1896.

President.—E. W. Brabrook, Esq., F.S.A.

Vice-Presidents.—R. Biddulph Martin, Esq., M.P.; Sir Hugh Low, G.C.M.G.; Cuthbert E. Peek, Esq., M.A.

Hon. Secretary.—O. M. Dalton, Esq., B.A.

Hon. Treasurer.—A. L. Lewis, Esq., F.C.A.

Council.—G. M. Atkinson, Esq.; H. Balfour, Esq., M.A.; W. M. Beaufort, Esq.; J. F. Collingwood, Esq., F.G.S.; A. J. Evans, Esq., M.A., F.S.A.; J. G. Garson, Esq., M.D.; W. Gowland, Esq., F.S.A.; Prof. A. C. Haddon, M.A.; T. V. Holmes, Esq., F.G.S.; R. B. Holt, Esq.; A. P. Maudslay, Esq.; J. L. Myres, Esq., M.A.; J. Edge-Partington, Esq.; F. G. H. Price, Esq., F.S.A.; R. H. Pye, Esq.; C. H. Read, Esq., F.S.A.;

F. W. Rudler, Esq., F.G.S.; Prof. Arthur Thomson, M.A.; Coutts Trotter, Esq., F.G.S.; M. J. Walhouse, Esq.

A vote of thanks to the retiring Secretary, Mr. C. E. Peek, was moved by the PRESIDENT, seconded by Mr. GOWLAND, and carried by acclamation.

A vote of thanks to the retiring Vice-President, the retiring Councillors, the Treasurer, the Auditors and the Scrutineers, was moved, seconded, and carried by acclamation.

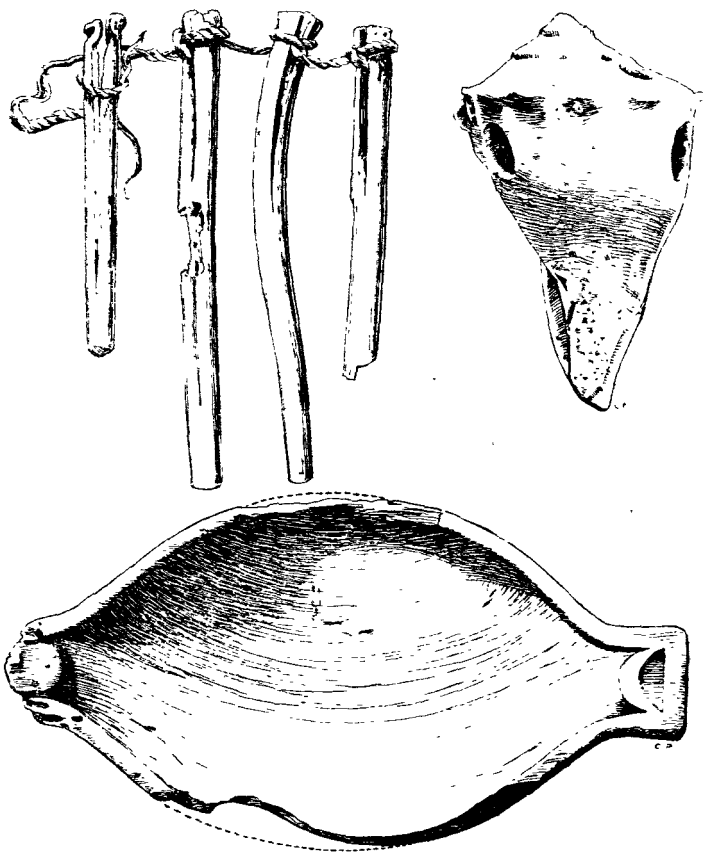
ANTHROPOLOGICAL MISCELLANEA AND NEW BOOKS.

Readers of the Journal are invited to communicate any new facts of especial interest which come under their notice. Short abstracts of, or extracts from letters, will be published at the discretion of the Editor. Letters should be marked "Miscellanea" and addressed to The Secretary, 3, Hanover Square, W.

Lieut.-Col. Durnford has recently presented to the British Museum a small but interesting series of antiquities, excavated by himself at Marco, South West Florida. In this part of America there is naturally always a feeling of doubt, whether there may not be Spanish influence in the antiquities found near the coast. In the present case, however, the evidence of the objects themselves would seem to point to a purely native origin. The articles appear to have been found in what is locally known as a "muck tract," and consists of a pointed oval dish or tray of wood, which at present is of a light brown colour; remains of a net; a small piece of rope; a series of small stakes tied together at their heads; three conch-shells; and a number of other objects of an indeterminate character. The tray is such as might be used for cooked or uncooked food; it has a square projection at each end, upon which is represented a crescent. The net is of about a 2-inch mesh, and seems to have an unnecessarily complicated knot. The small stakes would appear to have been used to stick into the ground, the distance apart being regulated by the cord. It is Col. Durnford's belief that the conch-shells represent the weapons of the find. Each of them has circular holes through the broad end, the dimensions of the holes being in proportion to those of the shell, so that a stick of appropriate size could be passed through them. The whole would thus form a not unserviceable battle axe, the lip of the shell being cut away, and thus presenting something like an edge at the smaller end.

Among the smaller objects found was a cockle shell (size $3\frac{1}{8}'' \times 2\frac{1}{8}''$) with a circular hole in the centre; the inner surface is considerably stained with a reddish colour, as if it had been used as a strainer for some colouring matter. Some peculiar spines were also found, which seem to be the spines from the fins of fish; these are

pierced at the larger end, and it seems probable that Col. Durnford is right in thinking that they were used as ornaments, much in the same way as the ground cachalot teeth are used in the Fiji Islands.



Col. Durnford has published an account of his find in "The American Naturalist" for November, 1895.

C. H. R.

"Life in Ancient Egypt." Described by Adolf Erman, translated by H. M. Tirard, with 400 illustrations in the text, and 11 Plates. London, Macmillan and Co., 1894. Roy. 8vo.

It is with much pleasure that we welcome the appearance in English of Dr. Erman's magnificent work *Die Aegypten*, translated by Mrs. Tirard. The numerous discoveries which have been made

in recent years have added so enormously to our knowledge of Ancient Egypt and its people, as to render earlier accounts of their home life more or less obsolete.

The work is divided into an introduction and twenty chapters. The introduction deals briefly with the traditional characteristics of Egypt, its importance in the history of the world, and the sources of information from which particulars as to the civilisation of Ancient Egypt is obtained. In the first chapter the geology and physiography of Egypt are discussed, also the divisions of the country in ancient times. The second chapter gives a short account of the supposed origin of the Egyptians and of their characteristics. The author considers that they may be regarded as an indigenous people, "even if it should be proved that their old language, like their modern one, was imported from other countries." As regards their colour, he says, "they believed themselves to be superior to foreigners by the colour of their skin. The Syrians were light brown, the Libyans white, but the Egyptians had received from the gods their beautiful colour, a deep dark brown for the men, a light yellow for the women." We must confess that we would have liked to have had from Dr. Erman's pen much fuller information on the subjects of this chapter. The third chapter deals with Egyptian chronology from the IVth to the XXnd Dynasties. This he divides into three periods, the IVth to the VIth Dynasties, constituting the so-called "Old Empire," the XIIth and XIIIth, the "Middle Empire," and the XVIII-XXth, the "New Empire." It is the manners and customs of the Egyptians during these three periods only which are seriously considered in the rest of the book, since there are no monumental inscriptions or documents belonging to the first three dynasties; the VIIth to the XIth, and the XIVth to the XVIIth are periods of political confusion, and after the XXth inscriptions and papyri are too rare to yield satisfactory results for the author's object. Having thus cleared the way and defined the periods to which his Ethnography of the Egyptians refers, he describes in the fourth chapter the King and his Court, then follows in the fifth and sixth chapters respectively an account of the political conditions in Egypt under the Old and New Empires. The other chapters deal consecutively with the police and the courts of justice, family life, the house, dress, recreations, religion, the dead, learning, literature, the plastic arts, agriculture, arts and crafts, traffic and trade, and the last chapter is on war.

The translator must be congratulated on the interesting and excellent rendering she has given of the English edition, into which she has imported notes referring to English Egyptological works, and some of the more recent researches of foreign scholars. We cordially join with her in hoping "that *Life in Ancient Egypt* may give pleasure and help to many, who in their busy life prefer to read books in their mother tongue," feeling sure that its perusal will be attended with a satisfaction and interest which cannot be obtained from such works of fiction as are unfortunately only too

frequently the chief or only mental pabulum of so many people of the present day.

We cannot conclude our notice of this work without a word in allusion to the admirable manner in which it is got up and illustrated. The publishers have certainly done their part admirably.

J. G. G.

"Penological and Preventive Principles, &c." By William Tallack, Secretary of the Howard Association, London. Wertheimer, Lea and Co., 1896. Published at 8s.

This book is mainly occupied with the principles of practical penology, criticising and reviewing the systems which obtain in civilised countries, and suggesting the adoption of necessary reforms.

Although it is not primarily a scientific treatise, it will not be without interest to anthropologists, for its pages bring out with singular clearness the inevitable deterioration both mental and physical of whole classes of our population under the supremacy of mistaken penological theories. One can well imagine the manufacture of the permanent criminal type when one reads of the terrible abuses once sanctioned by great European nations, and still not wholly extinct. Those who intend to make a special study of criminal anthropology could hardly do better than read Mr. Tallack's book: they will not find in it a sustained exposition of an elaborate theory; but it will introduce them into the atmosphere and environment of crime, and will serve as a general preface to more critical inquiries.

The greater part of Mr. Tallack's pages are concerned with the social aspect of crime. He draws upon his wide experience of prison organisation in almost all countries to substantiate and confirm his own views, amongst which we may particularly notice the following:—that the most effective punishments are the certain, short, and sharp; that the whole classic theory of compensation or retribution should receive a wider application; that the herding of convicts in gangs should always be avoided; and that capital punishment as at present carried out is not satisfactory. The author gives a necessary warning of the deceptive nature of criminal statistics, and incidentally notices the great value of the Bertillon system of anthropometry, in which it appears French warders are carefully instructed at La Santé. In support of his contentions he adduces a mass of varied and interesting facts, many of which will be startling to those to whom the precincts of a gaol are unknown ground. Mr. Tallack is a warm advocate of religious instruction as a prophylactic against vice, and his book is inspired throughout by a sane and vigorous humanitarianism.

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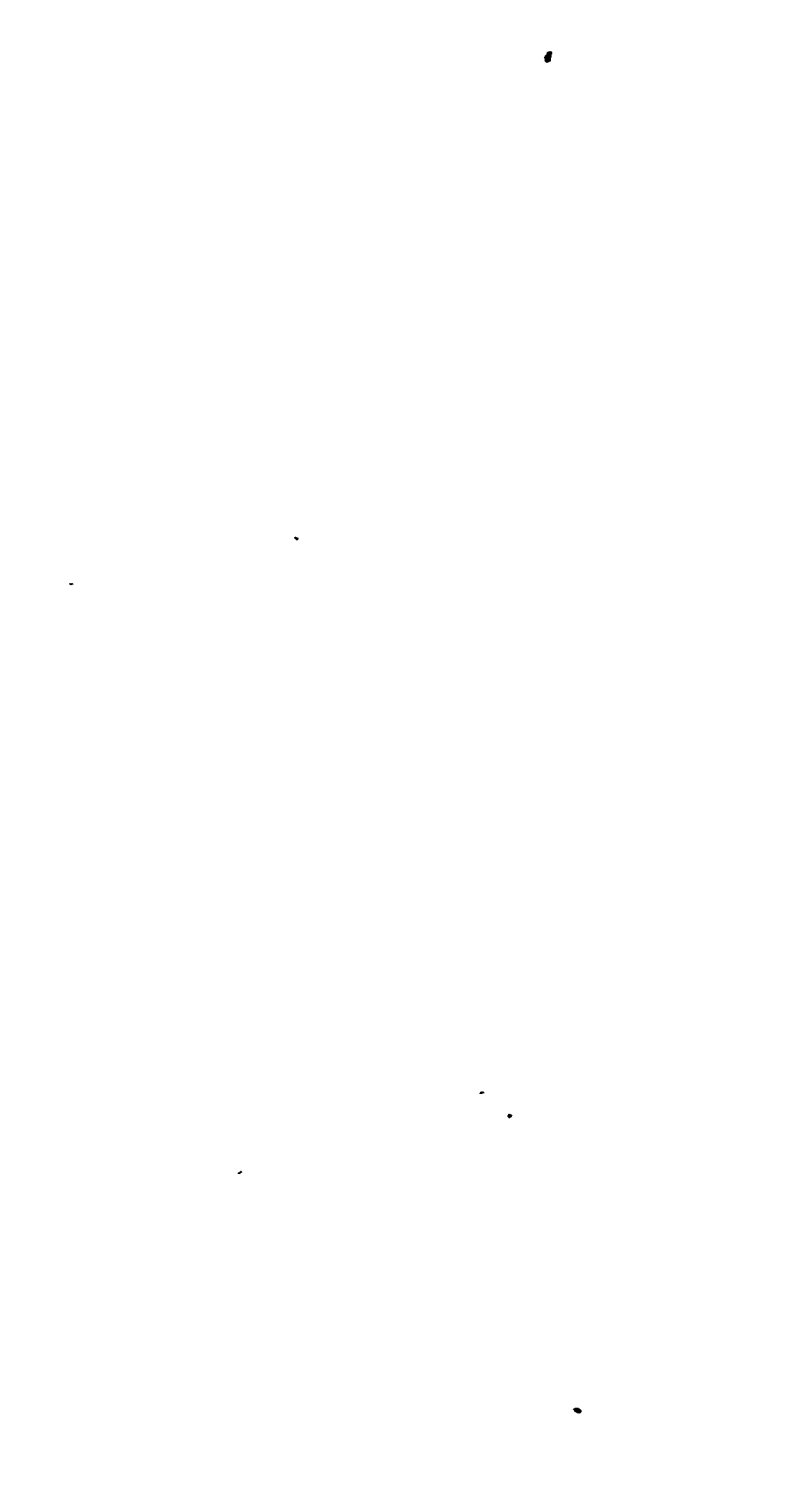
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